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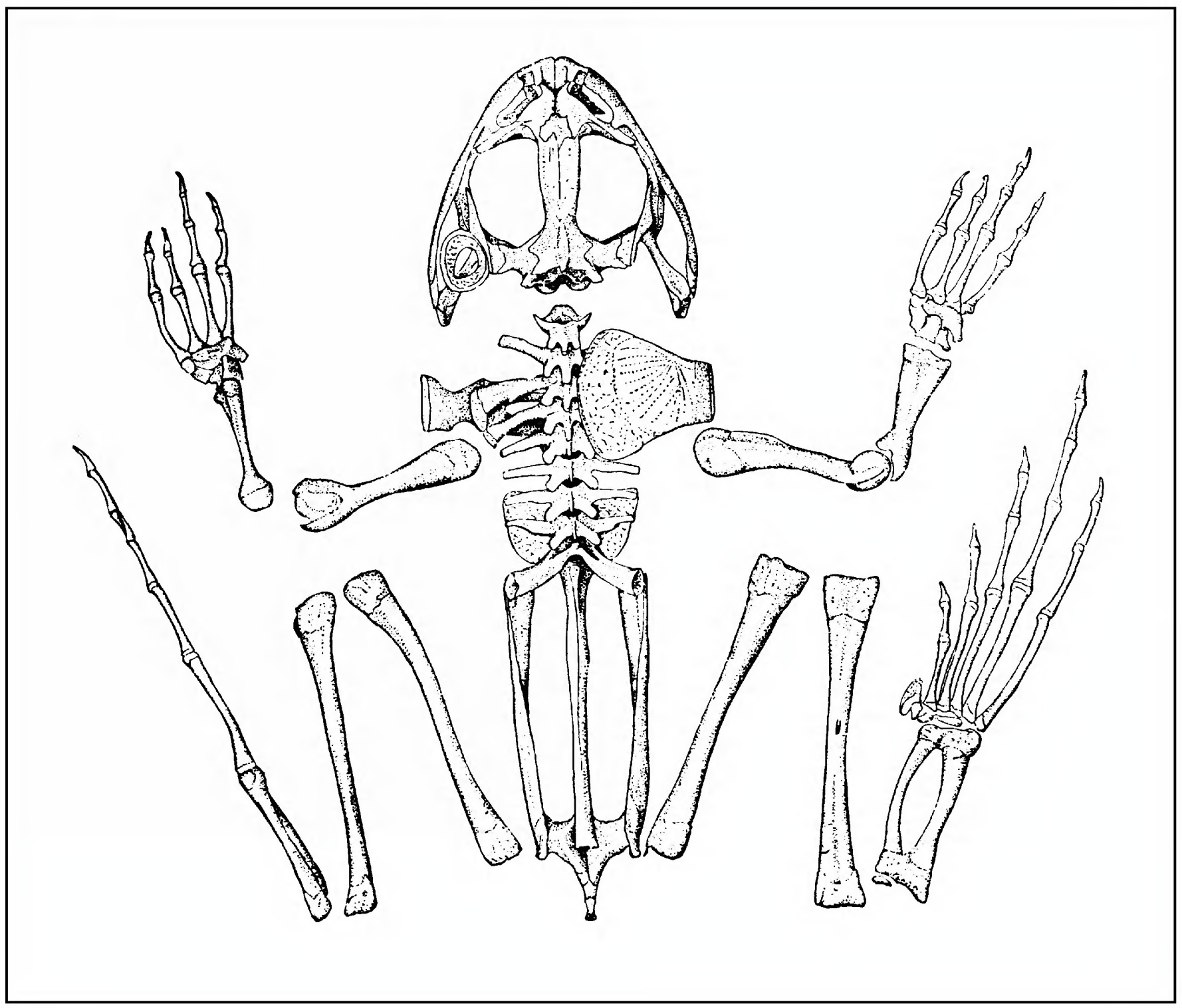

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A Practical and Safe Method for the Capture and Restraint of Venomous Snakes in the Field . . . . . Eli Greenbaum 1

Further Anomalies in the Litters of a Garter Snake from a Hazardous Waste Site . .Brian Gray, Hobart M. Smith and David Chiszar 4

A Behavioral Study on *Shinisaurus crocodilurus* . . . . . Julie M. Ray and Harlan D. Walley 7

Book Review: *Snakes of Western Australia (Revised Edition)* by G. M. Storr, L. A. Smith and R. E. Johnstone . . . . . Raymond Terrence Hoser 11

HerPET-POURRI . . . . . Ellin Beltz 13

Unofficial Minutes of the CHS Board Meeting, December 13, 2002 16

CHS Illinois Dangerous Animals Act Committee: Report to the CHS Board of Directors, December 13, 2002 18

Herpetology 2004 21

Advertisements 22

Herpers: Get Involved . . . . . Jim Hoffman 23

News and Announcements 23

Cover: Skeleton of an American bullfrog, *Rana catesbeiana*. Drawing from *Batrachia of North America* by Edward Drinker Cope, United States National Museum Bulletin No. 34, 1889.

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A Practical and Safe Method for the Capture and Restraint of Venomous Snakes in the Field

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Fitch (1987:157) said it best when he wrote, "Painful and lingering death, permanent crippling, or at best a highly traumatic experience may result from a single mistake or momentary lapse of caution when handling a venomous snake." This is especially relevant in developing countries where it may be extremely difficult or impossible to obtain medical attention for snakebite. Given the sobering consequences of accidents when handling venomous snakes in the field, every precaution should be taken to avoid situations in which snakebite could occur. Many workers restrain venomous snakes with hooks or tongs and then pick them up by hand. This technique may be unavoidable under certain circumstances. However, there is an inherent and obvious danger to placing one's hand in close proximity to the mouth of a venomous snake; this risk should not be taken unless it is absolutely necessary. Moreover, certain species (e.g., *Atractaspis*) cannot be handled in this manner at all (Spawls and Branch, 1995).

Many techniques for capturing and restraining venomous snakes have been proposed in the literature, including various "snake sticks" and hooks (Almandarz, 1986; Conant and Collins, 1991), tongs (Pillstrom, 1954), noose or strap sticks (Schmidt and Davis, 1941; Conant, 1958; Bellairs, 1967; Fowler, 1978), padded nooses (Gregory et al., 1989), noose tubes (King and Duvall, 1984), plastic buckets or lids with holes for the head of snakes (Freed and Freed, 1983; Gillingham et al., 1983), plastic tubes and pipes (Johansen, 1959; Sutherland and Hampton, 1960; Murphy, 1971; Presst, 1971; Radcliffe, 1975; Walczak, 1991; Altimari, 1998), wire mesh cable holders (Mauldin and Engeman, 1999), velcro restraint boards (Ward and Harrell, 1978), tape and rods (McDonald, 1964), wooden troughs (Luck and Keeler, 1929), and squeeze boxes (Quinn and Jones, 1974; Cross, 2000). Jennings and Vindum (1991) avoided the risk of handling venomous snakes for lethal injections by using a snake injecting stick. Hoop nets with long, semi-transparent bags can also be used to capture venomous snakes, usually with the assistance of a hook or pair of tongs.

These techniques have numerous advantages and disadvantages in regard to stress and damage to the snakes, ease of manipulation of restrained snakes, practicality for use in the field, cost of construction, and applicability to different species and sizes of snakes. Many of these techniques are not practical in the field—e.g., those that are require the researcher to: (1) directly handle the snake with bare hands unless a hoop net is used (hooks, tongs); (2) spend time manipulating the snake into a tiny space (plastic tubes); (3) require two or more people (snake injecting stick); or (4) are used to measure snakes after capture (squeeze boxes). Herein, I propose the use of a five-gallon (18.93 liters) bucket and lid, and a Plexiglas "plunger" as a practical, inexpensive, and relatively safe method for the capture, control, and lethal injection of venomous snakes.

This device was constructed from a five-gallon (18.93 liters) bucket and lid, available from most hardware stores at low cost. A few small-diameter holes (0.25 cm) were drilled into the side and lid of the bucket to provide ventilation. For the purposes of capture and control, queen-size pillowcases (i.e., snake bags) were draped into the bucket in a similar fashion to a plastic bag in a garbage can. Snakes were placed into the bucket with a hook or pair of tongs (Figure 1a), or in the case of larger viperids, were prodded into a bucket that had been placed on its side. Once the snake was inside the bucket, the top of the pillowcase was pulled over the top edge of the bucket using the hook or tongs; at the same time the lid was replaced over the top of the bucket to prevent the snake from crawling out of the bag (Figure 1b). A foot was placed on the lid to hold it in place while the bag was slowly pulled through the tiny space between the lid and top edge of the bucket (Figure 1c). This was done slowly so that the animal was not pulled into this space with the material of the bag and injured. When enough material from the pillowcase was pulled through this space, the open end of the "snake bag" was tied off, the lid of the bucket removed, and it was then safe to remove the bag with the snake inside (Figure 1d).

I am aware of methods that utilize buckets or large plastic garbage cans to temporarily house venomous snakes in zoos or laboratories. Although buckets with secure lids can be used without bags temporarily, bags are necessary in the field for several important reasons: 1) in hot temperatures, sealed

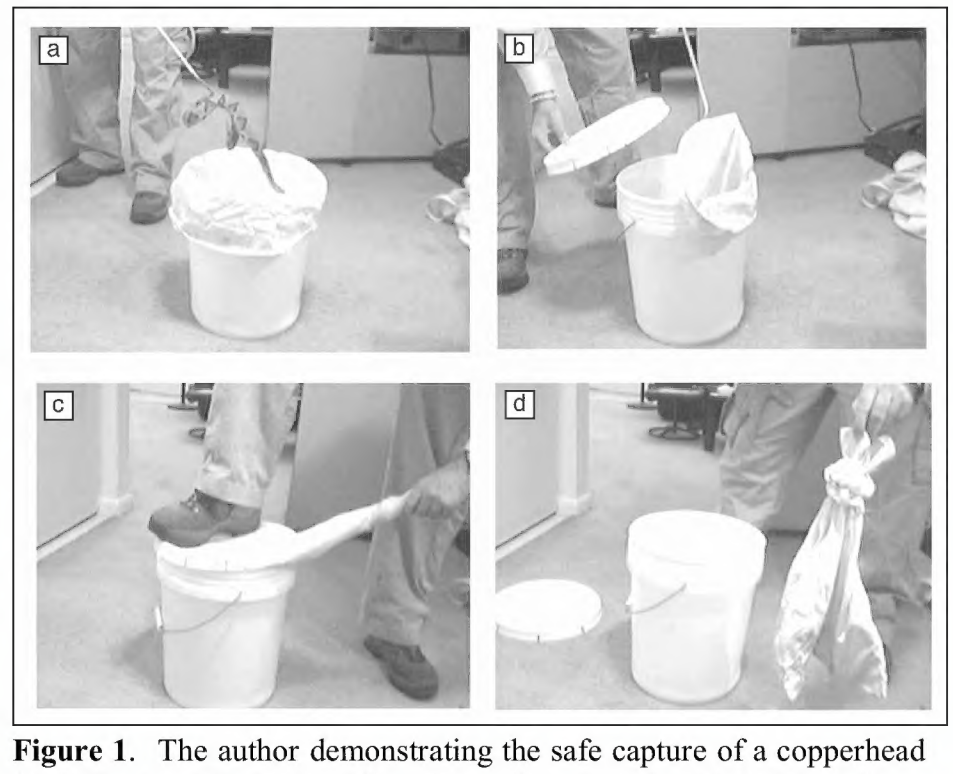

Figure 1. The author demonstrating the safe capture of a copperhead (*Agkistrodon contortrix*) with a five-gallon bucket, pillowcase and snake hook. See text for explanation.

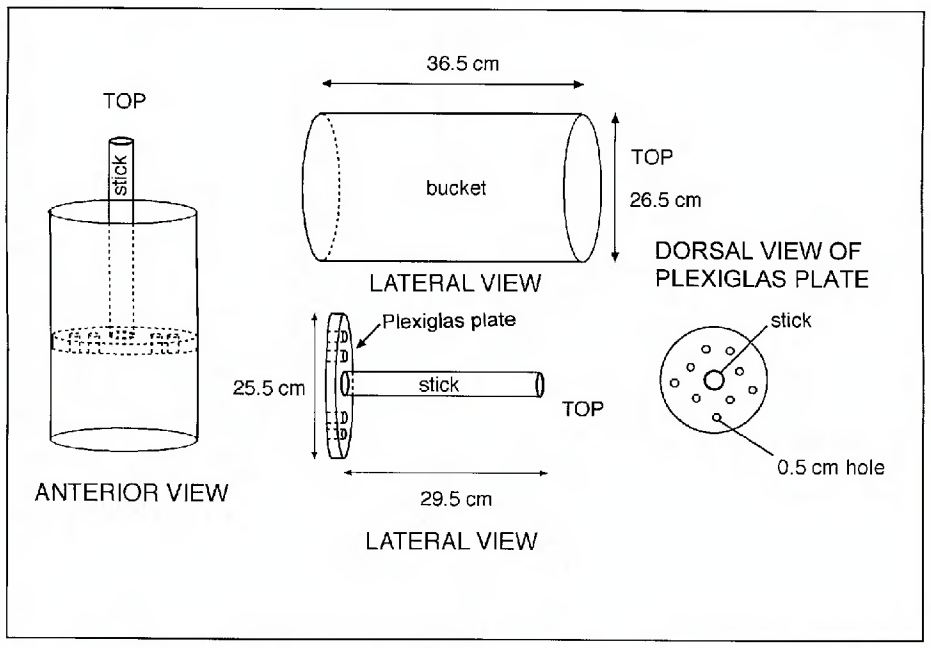

Figure 2. Schematic diagram of the five-gallon bucket and Plexiglas "plunger."

Figure 3. The author demonstrating the use of the restraining device with a black-necked spitting cobra (*Naja nigricollis*) in the field.

buckets may reach lethal temperatures; 2) sealed buckets may not provide enough ventilation for captured snakes that must be transported over large distances; 3) a bag allows the researcher to control the snake more effectively; and 4) if precise locality data are needed, a separate bucket will be necessary for each captured snake—quite impractical in the field.

To restrain a snake for the purposes of an injection, the five-gallon (18.93 liters) bucket was used with a Plexiglas "plunger" (Figure 2). The plunger consists of a circular piece of Plexiglas (0.5 cm thick) cut to fit snugly into the bottom of the bucket; numerous holes (0.5 cm in diameter) were drilled into the Plexiglas plate to allow the passage of needles for injection into the snake. A wooden handle (29.5 cm long) was screwed to the center of the Plexiglas plate to allow one to push the plunger into the bottom of the bucket, which prevents hands or fingers from approaching any holes or gaps where a bite could occur. A small pillowcase was placed into the bottom of the bucket to provide a cushion between the snake and the Plexiglas plunger. Small- to medium-sized snakes were placed in the bucket without a bag (Figure 3); larger or quick-moving snakes were placed into the bucket after they were enclosed within a "snake bag." Once the snake was in the bucket, the plunger was used to gently press the animal to the bottom of the bucket, thereby restricting its movement. Once the snake was restrained, it could be injected (i.e., for euthanasia), by inserting a needle through one of the holes in the Plexiglas plate; if no holes were over the snake, the Plexiglas plate could easily be rotated by twisting the wooden handle.

The method proposed herein has been tested with vipers ranging from 10 to 130 cm in the United States and El Salvador, and with elapids of up to 100 cm in Guinea, West Africa. The transparent plunger has the advantage of allowing the worker to safely view the snake while administering an injection. A shortcoming of this device is that very large snakes (> 150 cm or heavy bodied) may not fit into the bucket. However, a larger version of this device can be made with a larger bucket and appropriately scaled plunger. In addition to injections for euthanization, this device can be used for health-related injections of animals. It is hoped that this method and other safe handling techniques can be used to decrease the risk of snakebites to researchers in the field.

Acknowledgments

I thank S. Greenbaum for the schematic drawing of the device and D. Hardy Sr., J. Pramuk, E. Rundquist, C. Sheil, J. Simmons, O. Torres, L. Trueb and one anonymous reviewer for useful comments on the manuscript. A. Rosenzweig provided the photo for Figure 3. Midwest Custom Products (www.tongs.com) kindly donated equipment. Part of this work was supported by a grant from the Chicago Herpetological Society.

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Further Anomalies in the Litters of a Garter Snake from a Hazardous Waste Site

Brian Gray[1], Hobart M. Smith[2] and David Chiszar[3]

Abstract

A captive garter snake, *Thamnophis s. sirtalis*, collected in 1997 at a hazardous waste site near Erie, Pennsylvania, gave birth in 1997, 1999, 2000 and 2001 to litters of 17–46 snakes. Each litter contained 1–7 anomalous, merolepid individuals, most stillborn. In 2002 the same female gave birth to 13 snakes, of which seven were stillborn and displayed multiple anomalies, including absence of an eye (anophthalmia), enlargement of an eye (hyperphthalmia), shortened cranium (brachycrania), multiple vertebral kinks (scoliosis), and fusion of body coils (synsomia). Partial scalelessness (merolepidosis), the usual anomaly in earlier litters, did not occur.

Gray et al. (2001) reported several anomalous snakes born to a number of female *Thamnophis s. sirtalis* collected at an EPA-designated hazardous waste site near Erie, Pennsylvania. Most were merolepid (a condition commonly associated with split ventrals), but four instead exhibited an undeveloped lower jaw (mandibular agenesis).

As reported by Gray et al. (2001), one of the females produced litters of 17–28 snakes in 1997, 1999 and 2000, each containing 1–3 merolepid snakes, and no other visibly anomalous individuals. Since that time the same female produced litters in 2001 and 2002. They are of special interest for the anomalies that occurred in them.

The 2001 Litter

During 2001–2002 this female was kept with a male taken in 1995 at the same site as the female, and with an apparently normal male from her 1997 litter. She gave birth 30 July 2001 to 46 neonates, three of which were stillborn, and seven were merolepid.

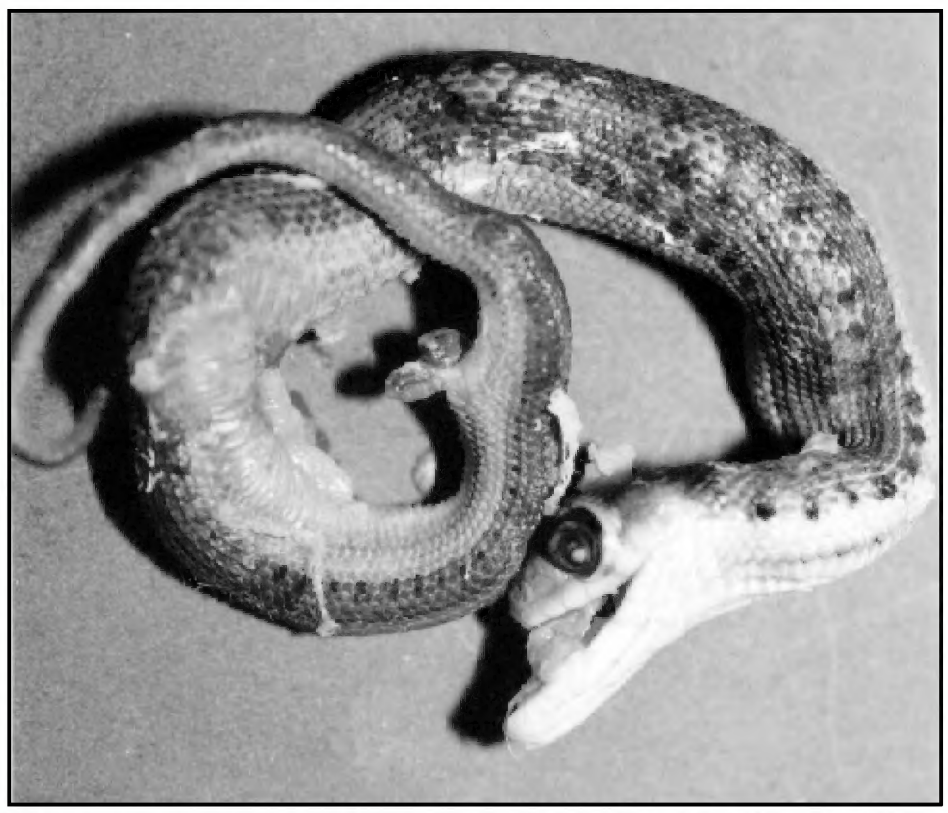

Figure 1. Specimen number 2, dorsolateral view. Note the normal pattern, shortened snout, enlarged eye, and tissue emergent from the parietal fenestra.

One of the three non-merolepid stillborns appeared normal, but the other two had abnormal fusions of the scales around the orbit—a condition of some significance in view of the anomalies occurring in the 2002 litter. The two upper postoculars were fused, leaving two instead of the normal three scales on one side of each of the two examples. The temporals were 1-1 on both sides of one, rather than the typical 1-2 scales. All these variants might be regarded as harbingers of the anomalies in the 2002 litter.

Of the seven merolepids, one lived for five months, the other for a year. Variation was examined in two (others were not available). The anal was divided in both, preceded by three divided ventrals in one, 30 in the other. The ventrals numbered 141–143, but were preceded by 7–16 irregular scales. The head scales in both were greatly reduced, much as in the merolepids described by Gray et al. (2001). The well-developed pattern was also like those previously described in merolepids.

The 2002 Litter

This litter was dramatically different from any other pro-

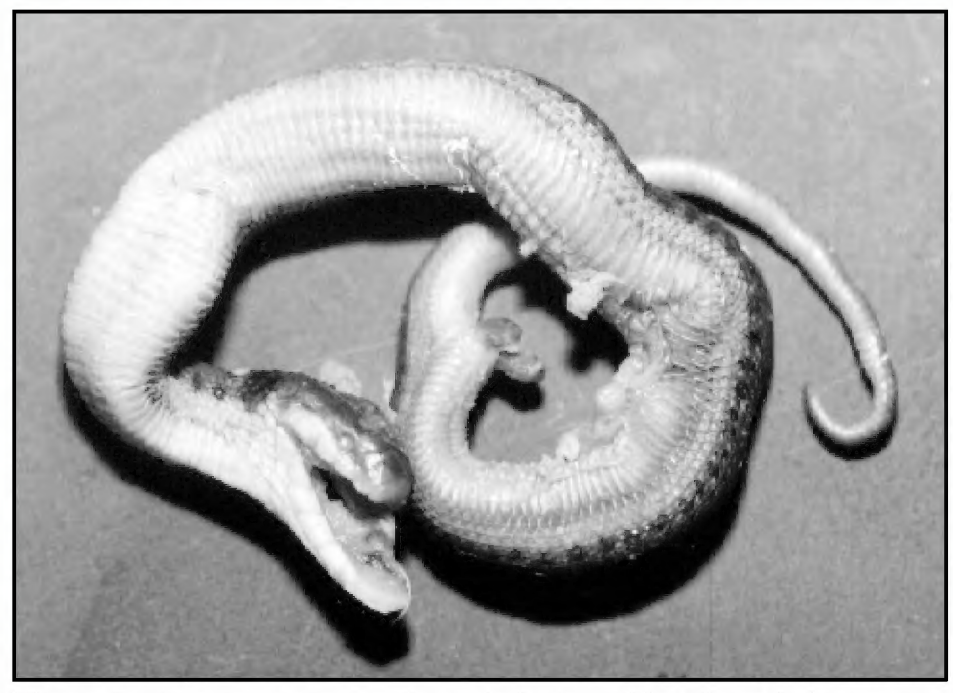

Figure 2. Specimen number 2, ventral view. Note the missing eye, foreshortened snout, and tissue emergent from the parietal fenestra.

1. 1217 Clifton Drive, Erie, PA 16505.
2. EPO Biology and Museum, University of Colorado, Boulder, CO 80309-0334.
3. Department of Biology, U.S. Air Force Academy, CO 80840.

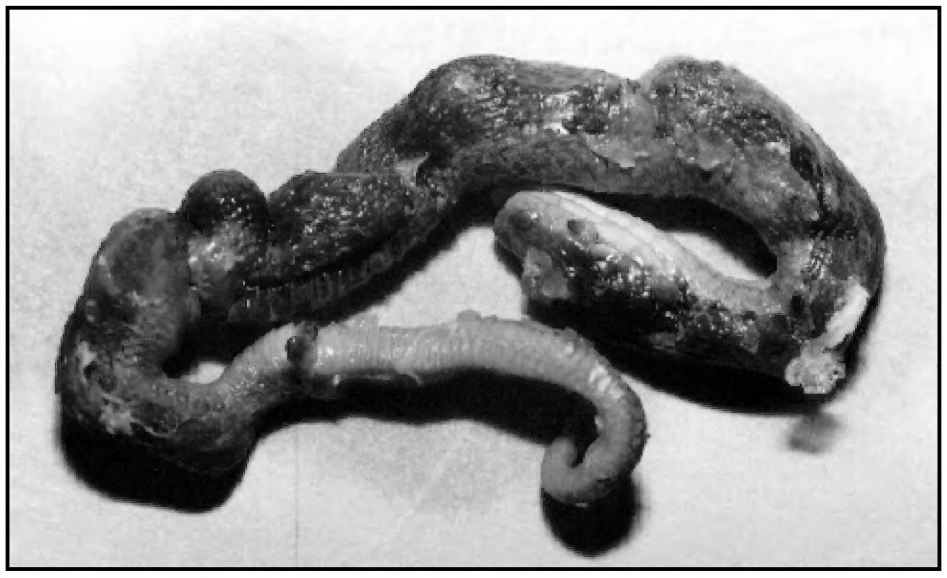

Figure 3. Specimen number 3, dorsolateral view. Note the absence of pattern, the partly covered, normal-sized eye, the parietal fenestra, and the multiple scoliosis.

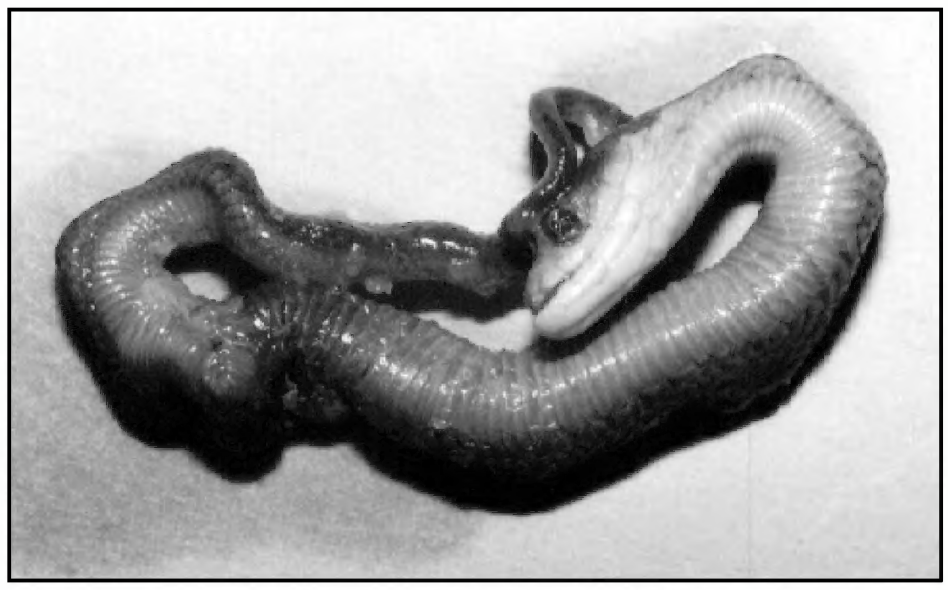

Figure 4. Specimen number 3, ventral view. Note the enlarged eye and prognathous head.

duced by this female. There were only 13 neonates, eight of which were anomalous, but none merolepid. The sole visible anomaly of one was a kink in the neck, where the ventrals were divided. The others, all stillborn, had more extensive anomalies, as described below.

Number 1. In the largest (TTL 150 mm, TL 33 mm), the most prominent deviations from normal are (1) absence of body pattern, and (2) partial occlusion of the eye. Scales cover about one-half of the orbit on the left side, about one-sixth on the right. The large, single, pre- and postoculars extend conspicuously over the eye on both sides, and, on the right, supralabials 3 and 4 extend slightly over it. On the left side the pre- and postoculars cover the lower third of the eye, separated by a small subocular. The anterior head scales are normal, but the parietals contact the 5th of the 7 supralabials, the temporals are 1-1, and the frontal and supraoculars are abnormally broad (width ~2/3 length). The supraoculars thus encroach on the upper edge of the orbit. The dorsum is uniform brown, and the light ventral color extends dorsad over the third scale row. Neither the ventrals nor the anal is divided.

Number 2. The next largest specimen (97 mm TTL, 27 mm TL) has numerous bizarre anomalies. The eye is missing on the right, and is enlarged on the left (see Figures 1 and 2). The snout is foreshortened so that the cranium is about 25% shorter than the lower jaw. There is a large, slightly oval parietal fenestra, through which amorphous, whitish tissue extends forward about 2.5 mm. The dorsal head scales are distorted, but all are present and more or less normally positioned except for the parietals, which are not clearly distinguishable. The supralabials are 7-7, infralabials 10-10. The scales about the left orbit are extensively fused and distorted. Some ventrals around the large umbilicus are divided, but the others are entire although a deep median groove extends the length of the venter elsewhere. The anal is entire, the subcaudals divided, and the hemipenes everted. The pattern is normal.

Number 3. The next largest neonate is slightly smaller than the preceding, but is not measurable due to severe, multiple kinks over most of the body, especially posteriorly (Figures 3 and 4). The cranium is foreshortened, but less pronouncedly than in Number 2. A large parietal fenestra is present, through which whitish tissue protrudes. The right eye is about one-third covered; the left one is much larger but overgrown like the right eye by abnormal surrounding scales. The body scalation is normal except for the scoliotic distortions. The snout scales are irregular, the supralabials 5-5, infralabials 9-9.

Number 4. This is the next largest, but not measurable due to fusion of the coils of the body posteriorly. The ventrals are not medially divided except for a span of ~40 scales near midbody, where the viscera are extruded. The head is slightly

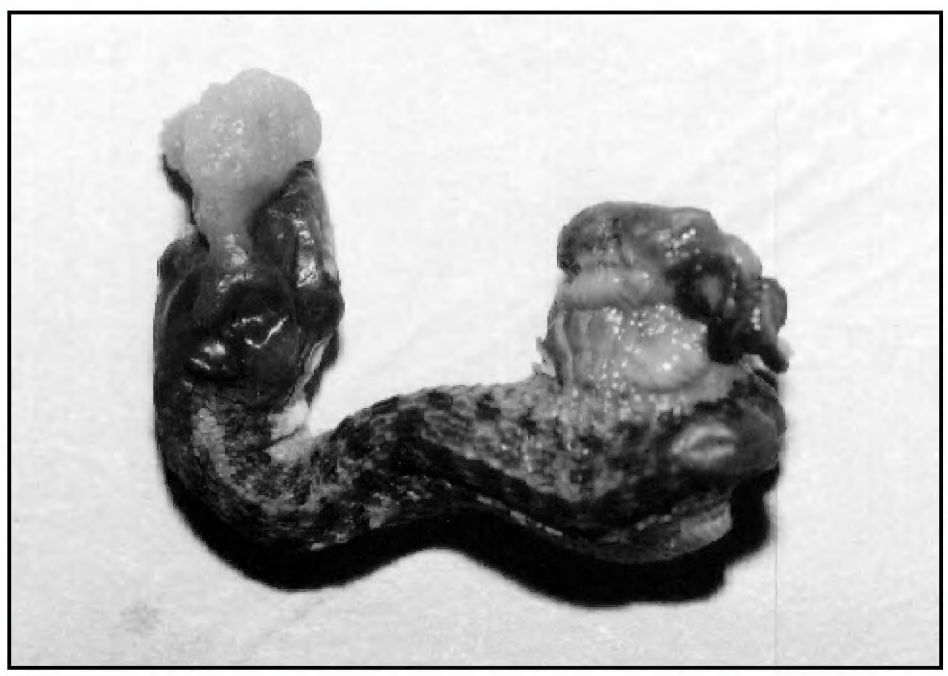

Figure 5. Specimen number 5, dorsal view. Note the protuberant mass emergent from the parietal area.

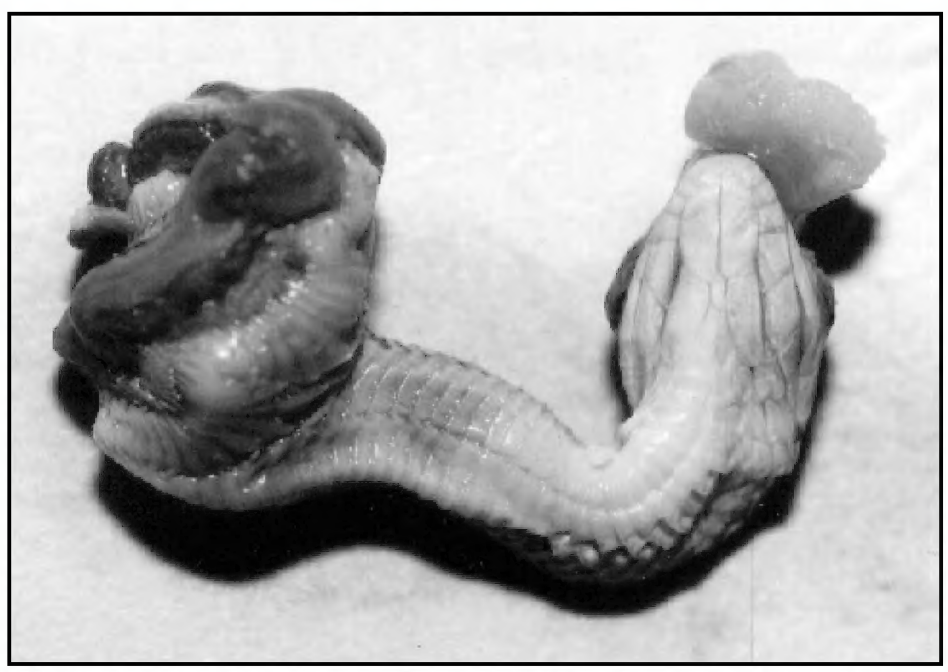

Figure 6. Specimen number 5, ventral view. Note the exposed epaxial tissue on the rear parts of the body.

Figure 7. Specimens number 6 (lower embryo) and number 7 (upper embryo). Note the strongly foreshortened snout in number 6.

prognathous (lower jaw jutting forward), and its scales are normal dorsally, but extensively fused laterally. The loreal and nasal are fused, the pre- and postoculars 1-1, the parietal and temporal fused on one side, and the supralabials mostly fused as one. The infralabials are more or less normal, 10-10. The pattern is only weakly evident.

Number 5. This is the next largest, but again is immeasurable due to fusion of the posterior coils of the body (Figures 5 and 6). The snake is slightly prognathous, and the eyes are rather protuberant in a misshapen head. There is no open parietal fenestra, but a mass of solid, white tissue, almost as large as the head, protrudes from a stalk originating in the midparietal area. The head scales are not clearly recognizable. The skin is split middorsally for about one-third the length of the body posteriorly, broadly exposing the epaxial musculature.

Number 6. This snake is a small, coiled embryo, 11 mm in diameter (Figure 7, bottom embryo). It has extreme brachycrania, with little snout remaining anterior to the poorly discernible orbits. The parietal fenestra is present, with protuberant white tissue. Extensive scoliosis is present posteriorly. The body scales and pattern are essentially normal, except as affected by scoliosis.

Number 7. This is much like the preceding, with a coil 10 mm in diameter (Figure 7, top embryo). The body scales and pattern are normal. The head is not well formed, but clearly brachycranial. The snake is anophthalmic on the right, but the left eye is enlarged.

Discussion

Of the eight anomalous snakes in the 2002 litter, seven have deformities of the eyes and/or adjacent scales (as did two of the 2001 litter); two of those seven lack an eye on one side; six have a foreshortened snout, severe in three; four have a parietal fenestra and/or tissue protruding from the midparietal area; six have scoliosis, multiple in five; and at least two have a loss of pattern. Reduction or absence of the eye on one side was usually accompanied by an enlarged eye on the opposite side.

Anomalous individuals constituted 62% of the 2002 litter, only 6–15% (steadily increasing) over the years 1997–2001. And the anomalies of the 2002 litter were completely different from those of earlier litters, and more varied. Finally, the 2002 litter was distinctly smaller (13) than any of the others (17–46). The significance of these three major differences is conjectural. There may be a trend toward increase of lethality.

Acknowledgments

We are indebted for the support of our several institutions. However, the opinions expressed herein are those of the authors, and do not necessarily reflect the opinions of the Department of Defense, the United States Air Force Academy, or other federal agencies.

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A Behavioral Study on *Shinisaurus crocodilurus*

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The Chinese crocodile lizard (*Shinisaurus crocodilurus*) is a rare and poorly understood endemic species from the Guangxi Autonomous Region of China. Zhao and Adler (1993) cited the range within the "Central China region, which includes the drainage basin of the middle and lower valley of the Chang Jiange (Yangtze River)," which is between the "Paleoarctic and Oriental continental biogeographic realms" of China (Zhao Ji et al., 1990). The providence is a mountainous region having extended rainy periods with moderate temperatures peaking at 30°C during summer months, while winter months are normally above 10°C (50°F) with the trees and grass remaining green throughout the year (Zhao Ji et al., 1990). After its description by Ahl (1930), *S. crocodilurus* was nearly forgotten until 1985 when China began allowing wildlife trade with outside countries (Sprackland, 1989a,b).

Good et al. (1993) provide information regarding the lectotype, as Ahl (1930) failed to designate either of the two specimens described as a holotype. Good et al. (1993) designated Berlin Zoological Museum specimen ZMB 34034 as the lectotype as "Yao Shan [= Mt. Yao], Kwangsi Providence (= Guangxi Autonomous Region)."

The taxonomic status of *Shinisaurus* has been debated ever since its original description by Ahl (1930). Ahl placed the new species in the new family Shinisauridae, and considered it a close relative of the Bornean monitor, *Lanthanotus* of the family Varanidae. This was later followed by Nopcsa (1932) and Pope (1935), with Nopcsa (1932) briefly discussing its possible close relationship with *Lanthanotus* and *Heloderma*. McDowell and Bogert (1954) placed *Shinisaurus* in the family Xenosauridae with *Xenosaurus*, a genus found in Central and southern North America. Underwood (1957) however, strongly criticized this work. Hu et al. (1984) and Zhao and Adler (1993) restored *Shinisaurus* to the monotypic family Shinisauridae, and Macey et al. (1999) agreed with this arrangement in the first molecular phylogenetic study of the species.

Osteology and musculature studies were provided by Barrows and Smith (1947), McDowell and Bogert (1954), Haas (1960), and Hecht and Costelli (1969) adding to distinguish *Xenosaurus* from *Shinisaurus*. Barrows and Smith (1947) found the number of thoracic vertebrae as 22 in *Xenosaurus* whereas *Shinisaurus* has 17, which disagrees with McDowell and Bogert (1954) showing 20 thoracic vertebrae for *Xenosaurus*. Both *Xenosaurus* and *Shinisaurus* have a single lumbar vertebra, with the neural spine being quite prominent in *Shinisaurus*, but reduced to a small ridge in *Xenosaurus*. The caudal vertebrae number 37 in *Xenosaurus*, and exceed 40 in *Shinisaurus*; both genera have two sacral vertebrae. Haas (1960) found both possessing a *levator angulia oris* muscle, which the authors find rarely in saurians and ophidians.

Shinisaurus crocodilurus possesses a high, laterally compressed head and very long neck. Large tubercles on its back, arranged in rows and extending onto the dorsal tail region, giving the animal a crocodile-like appearance (Bauer, 1998). These lizards are viviparous; gestation lasting seven or eight months (Bauer, 1998), producing litters from five to eight (Grychta, 1993; Bauer, 1998). They are diurnal, spending much of their time sluggishly basking above waterways, but quickly retreat to the water when disturbed, a behavior frequently observed during this study.

Very little research regarding the behavior of this animal has been done, although several zoological parks throughout the world have set up breeding programs (Visser, 1989a,b; Kudrjawtsew and Wasiljew, 1991; Kudryavtsev and Vassilyev, 1998; Will et al., 1999). Also, several recent publications have appeared on captive husbandry and breeding of this species (Wermuth, 1985; Sprackland, 1989a,b; Kudrjawtsew and Wasiljew, 1991; Grychta, 1993; Hofmann, 1994; Mägdefrau, 1997; Kudryavtsev and Vassilyev, 1998; Will et al., 1999; Hofmann, 2000; Rogner, 2001), but behavioral tactics have yet to be described. Since 1991 *Shinisaurus crocodilurus* has been a CITES Appendix II species (Frank and Ramus, 1994; Ramus, 1996; Mägdefrau, 1997) with populations in the wild estimated at less than 2500 individuals. The constant threat of habitat destruction menaces the remaining populations. Me Yunming (2000) comments on the measures being taken for the protection of *S. crocodilurus* in China.

The present study will provide additional information on the behavior of *Shinisaurus crocodilurus* in a zoological park, where natural effects have been simulated.

Methods

The study animals consisted of four *Shinisaurus crocodilurus* housed in an enclosed exhibit at the Chicago Zoological Society's Brookfield Zoo, Brookfield, Illinois, U.S.A. The enclosure measured 1.4 m wide by 1.5 m long by 1.6 m high at the greatest points. The cage was accessed for husbandry from above through a wooden door. The remainder of the top of the cage was covered with quarter-inch screening. The front of the exhibit was enclosed with two-way glass. The remaining three walls were of epoxy-finished concrete. The cage featured a pool with a floor drain and a safety overflow. The overflow was seldom utilized for these animals, as it was higher than the normal maintained water level. Branches, rocks, and foliage (*Dracaena, Pathos, Ficus*) were arranged in and around the pool to allow for access out of the water for basking and resting sites. The back of the exhibit featured a cliff setting, furnished with hardwood mulch, rocks, and potted plants of the species cited above.

The animals were maintained on a diet of crickets, earthworms, mealworms, and occasional pinkie mice. All were

adult animals (exact ages unknown), although sexes were not confirmed during this study. Each was marked with a distinguishing symbol with Bic Wite Out correction fluid, on the black patch on each side of the neck. These patches were occasionally repainted if needed. Each animal showed indications of having tail regeneration, which served as a secondary means for identification. All four lizards were similar in weight (125–150 g) and size.

Study animals were hibernated at 10°C from 18 December 2000 until 18 February 2001 in an off-exhibit environmental chamber. This hibernation schedule closely paralleled that used for Russian sand boas (*Eryx miliaris*) at the same facility (M. Cipiti, per. com.). Animals were returned to their enclosure on 28 February 2001 following a brief period off exhibit, which allowed them to acclimate to warmer temperatures, and to routine disturbances. Beginning in mid-April, rain cycles were simulated by a mounted garden hose featuring a spray nozzle over the screentop caging material. Water temperatures were regulated between 18 and 27°C. The rain would normally begin around 8:00 A.M., and usually continued until early afternoon. The shower would not be constant as the water temperature would fluctuate and was set to shut off if outside the required temperature range. The drain in the floor of the pool was opened slightly to prevent flooding in the cage. Water depth in the cage varied from 0.0 to 18.3 cm. If the water had completely drained out, the drain was closed so animals were never without standing water for any extended period of time. A thermometer was suspended on a cord above the water to measure ambient temperature within the enclosure. One basking spot was offered with heat supplied by a bulb placed over the exhibit. Lizards were allowed to within 0.3 m of the light source.

Observations extended from 28 April 2001 to 15 June 2001, with routine observations taken from five to six days per week from outside the enclosure while standing to either side of the glass window. Periods of observations lasted ten minutes and extended from 7:45 to 17:00 hour each day. The senior author recorded four to 12 observation periods per day. At the beginning of each period, each lizard's exact location within its environment, water depth (measured from outside the cage), and ambient temperatures were recorded. During each ten-minute observation period, movement and activity for each lizard were noted. If a specific activity was stopped and later restarted, it was again recorded. Occasionally a lizard was not visible, and identification signs were not recognizable, and in this case activity was not recorded. If an animal was not visible for an entire day, it was physically located at termination of the day's observations and checked for husbandry purposes.

This study hopes to provide insight on general behavior, and aggression and dominance displays.

The terms dominant and subordinate are used to describe the lizard in the aggressive and submissive positions, respectively. These terms were adopted from Kaufmann (1983) and Carpenter et al. (1970). A standard set of activities was developed from Carpenter and Ferguson (1977).

Displays

Displays of *Shinisaurus* would begin approximately 15 minutes following the rain cycle, and would continue until 1200, regardless of the rain being prolonged beyond this period. Also neither maintenance activities in an adjacent cage nor the amount of disturbance created on the public viewing floor appeared to affect the activity of the lizards.

Mouth gaping was frequently observed by three of the lizards at a given time. All four lizards were observed gaping, although lizard 1 gaped less frequently, and possibly this will be shown as representing a dominance-subordinate display pattern. Veterinarians previously had examined the lizards for signs of heat stress, but results were negative. Lizards were noted to gape regardless of a rain cycle, time of day, or environmental temperature within the cage, as previous observations by staff members had noted gaping behavior prior to this study.

Carpenter (1967) reviewed aggressive behavior involving tail swinging in iguanids, using *Dipsosaurus dorsalis* (Carpenter, 1961) and *Tropidurus* spp. (Carpenter, 1977), and direct comparisons for this activity have been made on *Shinisaurus*. The dominant lizard would lunge at the subordinate, and often swinging its tail around at the subordinate lizard. This frequently resulted in the subordinate lizard retreating into the water, or some other location within its confines.

Tail undulation was only observed in one lizard while in a vertical position. The S-shaped swinging pattern of the tail was slow and lasted for five seconds.

A jerky walk was observed, usually begun with the left foot lifted and moved forward in much the same fashion that a chameleon would walk. This movement was observed most often on the flat cliff area in the back of the exhibit and only on a horizontal plane.

Shaking of the forelimb was observed, but could have been in association with the removal of water from the feet or facial area. The lizard would raise the foot and rotate it in a circular motion, often coming in contact with its head. Carpenter (1963) noted such similar movement in the forelimbs of *Uma*, but this was a rapid up and down movement instead of a circular motion. Also such *Uma* displays involved bobbing of the head, never observed in *Shinisaurus*.

Push-up behavior has been described for *Streptosaurus mearnsi* (Carpenter, 1962a), but only one of the study *Shinisaurus* exhibited such a behavior. The display only involved the straightening of the forelimbs while the head remained level. The back limbs remained stationary and only the anterior portion of the abdomen was raised in the display. This was only observed four times during the course of this study. Carpenter (1963) noted *Uma notata* for its forelimb extension behavior, and this behavior closely resembles that which was observed in *Shinisaurus*.

Head bobbing is another common lizard display tactic, illustrated by Carpenter (1967) and Carpenter et al. (1970), which is also frequently observed in *Shinisaurus*. *Shinisaurus* does not possess a dewlap, although head shaking on an aver-

age of six times in succession frequently occurs in an up and down fashion. The lizards would also regularly use a circular head bobbing motion that was jerky in fashion. This head bob could be either clockwise or counter clockwise, although pushups, which were observed in conjunction with head bobbing by Carpenter (1967) were never observed in *Shinisaurus*.

When engaging in combat, *Shinisaurus* would face-off head to head as illustrated in Carpenter (1962b). Combat behavior closely resembles that exhibited and described for *Conolophus pallidus* by Carpenter (1969). The dominant lizard would lunge and bite at the head, forelimbs, or neck of the subordinate. Upon lunging and landing close to another lizard, both lizards would often bite at each other, or the subordinate lizard would eventually retreat. If biting did occur, the two (or sometimes three) lizards would lock and typically leap or fall into the water. At times blood was drawn, and once in a struggle, a tail was broken at the second fracture line adjacent to the tip.

Position

The study animals were provided with a large array of branches, rocks, and plants on which to bask. Both vertical and horizontal perches were provided. Although the highest perch in the cage was a vertical limb in the center of the enclosure, lizards would normally choose to sit at a slightly lower horizontal site. This was observed most frequently in the lizard that displayed the most, and apparently was the most dominant individual. The subordinate or lizard that displayed the least was rarely observed basking on either the horizontal or vertical high points in the enclosure, but spent the major portion of its time hidden behind plants or in the pool.

Aggression and Dominance

Many interactions were observed following soon after the rain cycle simulation was begun. Of the four lizards, lizard 4 was the most active and demonstrated the most displays. Lizard 2 was the least active and spent much of its time hidden in the foliage or in the water, and was most likely to retreat following any interactions. The only activity observed with any regularity with lizard 2 was occasional mouth gaping. Based on Carpenter and Ferguson (1977), this lizard could be considered subordinate. On the other hand, lizard 4 was most likely to demonstrate almost all aspects of display and was most likely to lunge and bite at the other lizards. Lizard 4 was noted to sit most often on a horizontal log in the center of the cage, which was nearly the highest point in the cage. Carpenter and Ferguson (1977) noted that lizards sitting in the highest location showed dominance over other individuals in the colony. This behavior plays a significant role for *Shinisaurus* also. Lizards 1 and 3 were both observed to display, but neither as frequently as lizard 4.

Discussion

Shinisaurus crocodilurus is noted for its sluggish behavior and tendency to bask above waterways until frightened, or disturbed. During this study, the senior author found that although *Shinisaurus* is a rather sluggish animal, it exhibits many display tactics that are quite similar to, or the same as, those shown by more active iguanid lizards. Although the sexes of these animals were not confirmed during this study, a definite difference in behavioral activities was observed in the four lizards. It was observed that lizard 4 displayed more frequently, and was far more active than the remaining three animals. Lizard 2 was most often displayed against, and typically retreated when approached. This behavior gave every indication of its subordinate behavior. The other two lizards seemed less involved in the activities, but still showed display potential. Whether these activities are related to territoriality or for mate selection is difficult to determine, but it can be stated that *Shinisaurus* does display and exhibit dominance in much the same fashion as more active Iguanidae and other better-studied saurian species.

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Book Review: *Snakes of Western Australia* (Revised Edition)

by G. M. Storr, L. A. Smith and R. E. Johnstone. 2002. 324 pp. including 57 pp. of color photos. Western Australian Museum, Perth, WA. http://www.museum.wa.gov.au/

Available from various herpetological booksellers for about $39.95 in Australia or about US$30.

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To go to Western Australia in search of snakes is every herpetologist's dream come true. I recall the first time I went there in 1980 in search of herps and it really was like a trip to the wild west. Very few people there, a vast area full of unspoiled habitats and lots of new reptile species. Not just species new to someone like myself (an eastern Australian herper), but even species new to science!

And as for abundance? Well, I can tell you that from my own experiences, there is nowhere else in Australia you can consistently find herps in such abundance as in Western Australia. Try over 100 desert death adders (*Acanthophis pyrrhus*) in a single night! Or over ten pythons in a 24-hour period. And what's changed in the last 20 years? Not much really. In Western Australia there are still herps everywhere.

By and large, most species found in Western Australia are new to people from anywhere else and on that basis alone, the place is definitely worth a visit. Which gets us to what every herper needs when visiting a new area—a good local field guide.

Not surprisingly the Western Australian Museum has stepped in to fill this void and over the past couple of decades has produced a series of excellent regional field guides covering most of the different groups of reptiles found in that state. But of greatest interest to most herpers are the snakes and that's why I'm reviewing this latest offering here.

Way back in 1986, the WA Museum produced the first edition of their *Snakes of Western Australia*, complete with color photos in the middle. It was an instant hit and was reprinted in 1988 without alterations. Eventually demand exceeded supply and there was a need to reprint again. But by the time this need arose, there was yet another problem. That was the steady stream of new species being described from within Western Australia.

And I'm not just talking about innocuous ones either. From large venomous snakes down the scale to small secretive ones, all have been described in the last 15 years and you can be confident that this latest book will be incomplete within a few short years. To give you an idea of the scale at which new snake species have been found and formally named in Western Australia, you need only look at the sizes of the 1986 and 2002 volumes, 200 pages versus 324 pages, respectively.

Like the original, the new book's layout is simple, concise and informative. In fact it's much the same. If read properly, a person with no knowledge of snakes should (in theory) be able to identify any snake found in Western Australia down to the species level. For a herper, this task is now made easy! This of course presumes for a moment that all species are already formally described and named, which put simply, is not the case.

The inside covers have excellent line drawings of snakes, showing and naming all the scales as used for diagnostic purposes. Following the preliminary foreword, contents, preface (by Ken Aplin, who, although not listed as an author, took a key role in preparing the revised edition), acknowledgments and introduction, the book proper starts. After a guide to using the book, and a brief synopsis of the Western Australian snakes in general, are species accounts for all the Western Australian snakes.

The format is much the same for all groups. First is a key, then the various summaries. In terms of family, genus and species, for each group level there is a key to identifying the relevant members of the group. For each account, the text is ordered thus: Diagnosis, Remarks, Derivation of name and References. The contents under each heading are self-explana-

tory. Distribution information is separately placed in an orange sidebar on the relevant pages in both words and with a state map, showing the known range by dots, which I presume match the records at the Western Australian Museum. The color photos in the center pages have specimens of most known taxa and are of generally high quality.

All in all, the book covers its brief well and is hard to fault within these constraints. The book does not delve into important matters such as finding these animals in the wild, wildlife laws, keeping in captivity, husbandry, breeding and the like. The authors of all herpetological books (and especially identification manuals) must make a number of taxonomic judgements. This book is no exception.

Problematic for the reviewers (principally Ken Aplin), the taxonomy of Western Australian snakes is in a state of flux and likely to remain so for quite some time. Usually book authors tend to go with the conservative position in terms of names of taxa and/or recognizing new taxa if they are named as a result of splitting what was formerly regarded as one. This is also the acknowledged position taken by Aplin. As a result, some of what is in the book is already effectively out of date. One example of this is the non-recognition of the species "*weigeli*" as described by Richard Wells and Ross Wellington in 1987, which Aplin incorrectly reported as being described in "1988." Following Shea et al. (1988), Aplin has treated this snake as merely a variant of the better-known mulga snake ("*Pseudechis australis*"). (Most Australian herpetologists regard the mulga snakes as being in the genus *Cannia*, with *Pseudechis* now being restricted to the live-bearing red-bellied black snake, *Pseudechis porphyriacus*). In terms of "*weigeli*" it so happened that Wells and Wellington were right and they really did have a new species. The results of my own investigations as published in Hoser (2001) (apparently after the cut-off time for this book), showed that *weigeli* is different from and sympatric with the much larger *australis*. This has also been confirmed by comparative investigation of the mitochondrial cytochrome-*b* DNA from the relevant taxa. From a practical point of view, all this means is that you'll have to wait for the next revision to see this species in the Western Australian snake book.

The conservatism of the authors perhaps shows up best in terms of their treatment of the pythons. Not surprisingly, the authors acknowledge the taxonomic changes of Hoser (2000), and although appearing to accept the various subspecific designations of Hoser (2000), except for two as inevitable, they don't openly adopt them. In error the authors claimed that two subspecies of *Aspidites* were only differentiated on the basis of distribution and hence asserted that the names were not valid under the ICZN's code. How they came to be under that misapprehension I don't know, as the various named taxa were separated on several criteria (including distribution) in the original descriptions and diagnoses and hence the names were available under the ICZN's code. However, even more surprising was the failure to recognize Australian "*fuscus*" as being a different python species than "*mackloti*" from Indonesia. I thought we'd all got over that one some years back. The Western Australian Museum people have in my view, never really got their python taxonomy in order. However, while the 1986 edition of the same book placed all Australian non-*Aspidites* pythons into the single genus *Morelia*, (thereby failing to recognize *Liasis* and *Antaresia*), this book has finally made the logical transition of recognizing these other genera. And yes, in fairness to the authors, they did stress that they took the very conservative view. Aplin, who did most of the revision obviously knows his herps, but one cannot but think that in terms of this revision he wrote sections based on what he knew in his head, rather than by direct reference to the literature, including as cited.

Besides the errors above (which would be understandable on the basis that Aplin wrote from memory and not by direct consultation with the references), there are more mistakes in terms of the death adders (Genus *Acanthophis*). Pleasingly he's adopted the taxonomic additions of Hoser (1998), but some of the other statements in terms of the taxa identified in the first instance by Wells and Wellington appear to be flawed. In terms of the species from northwest Western Australia, which Aplin still recognizes as "*praelongus*," he stated that the Wells and Wellington name "*lancasteri*" is a nomen nudem (unavailable under the ICZN's code) on the basis that the originally published description lacked a diagnosis, going on to prefer the (subspecies) name *bottomi* (Hoser, 1998) for the WA taxon. But Wells and Wellington (1985) actually had a 14-line diagnosis. Going beyond this, one finds that the original Wells and Wellington diagnosis only effectively separates *lancasteri* from *praelongus* on the basis of distribution, which I assume that Aplin may assert still makes the name invalid. But so far, I've been unable to find anything in the ICZN's (1999 fourth edition) code that invalidates a name on that basis (and based on the preamble to this code assume that the third edition was essentially similar in this regard). Thus, assuming that Wells and Wellington have in fact identified a new taxon, then we are stuck with their name, no matter how poor their original description or diagnosis was!

Putting it another way, the relevant section of the code is Article 13 and it reads as follows:

> 13.1. **Requirements.** To be available, every new name published after 1930 must satisfy the provisions of Article 11 and must
>
> 13.1.1. be accompanied by a description or definition that states in words characters that are purported to differentiate the taxon . . . .

Thus, by my interpretation of the code, if Aplin asserts that Wells and Wellington have failed to adequately differentiate their taxa, then he need not recognize it as such and not use their name, *but*, because the original description *purports* to differentiate the taxon (even if it in reality fails to do so), the name must be regarded as available (and useable) and not a nomen nudem, if and when someone else comes along and decides that the taxon concerned is in fact different and proves this, even if this is done using totally different criteria.

In terms of the species *Acanthophis hawkei*, Aplin asserted that Wells and Wellington had described it from northwest Queensland. In actual fact, they'd described it from Brunette

Downs in the Northern Territory. Having said this, I must make one comment overwhelmingly in favor of Aplin et al. in terms of this book. When they have made contentious taxonomic judgements, they have always made it patently clear and then gone further and set out their reasons and directed readers to the various references so that they can in turn make up their own minds. I don't recall any other reptile book's authors doing this to the same extent and for this, these authors deserve credit.

And yes, in terms of the totality of the book, the grievances above are effectively minor and for you the reader the only question really is as follows: Is the book worth buying? Put simply, if you have anything more than a passing interest in Western Australian snakes, the answer is a resounding "yes." Particularly as it represents great value for money in terms of the amount of information and book you get for your dollar. However, if you already have the 1986 or 1988 edition, the need for this latest edition is not so clear cut. While there are newly described taxa within its pages, including such cuties as *Acanthophis wellsei*, all but the keenest of Western Australian herpers could probably find the older edition adequate to their needs or desires (if they already have it), without having to spend up on a book that is by and large essentially similar.

Disclosure

In the recent past, I've named taxa after Wells, Wellington and Aplin and I haven't agreed with the totality of the taxonomic propositions of any!

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Bull. Chicago Herp. Soc. 38(1):13-16, 2003

HerPET-POURRI

by Ellin Beltz

Greetings from Australia! We left Ferndale, California, on the 14th, a day earlier than planned because the Eel River was rising so fast from the first winter rains that the main road into town was flooding. Ken drove our rental car through about 15 inches of water, slowly so the battery didn't get wet and our trip stopped before it began. Driving south on 101, the rain was falling so fast that we saw salamanders swimming across the road and I was waiting for the salmon to leap up on their way to spawn! Finally we arrived in a town north of Marin and decided to spend the night. The next day, in glorious sunlight, we got to San Francisco, turned in the rental car and got on a plane to Los Angeles. From LAX, we flew eleven hours to Sydney, Australia—arriving on December 17. Remember you lose a day crossing the international date line and get it back when you return. Everybody clears customs at this point; a jumbo jet of smelly, tired people arrived at the customs stations at local 6:00 A.M. to be met by very friendly Australians. I was surprised by their good nature having cleared U.S. customs and dealt with the highfalutin attitude of our uncivil servants on more than one occasion. From Sydney we flew to Perth and were met at the airport by Geoff Russell Kinetic Coordinator for the Mt. Lawley Rotary Club, and a wonderful friend of our friend.

We got our rental car, but were extremely grateful to Geoff for riding in front of us to the local photography store so we could buy film unfogged by international X-rays. We then had a coffee with Geoff and he put us on the road south from Perth, waived goodbye and went back to work. It's very strange to drive on the left side of the road, especially after umpteen hours in midair, practically no sleep and the sun to the north. Fortunately for us, once you get out of Perth itself, the traffic thins to practically nothing and so he could learn how to shift a five speed with his left hand, push the turn signals with his right hand and try not to flip the windshield wipers every time he signalled for a turn. When I first started driving (later in the trip), I flipped on the wipers instead of the blinkers several times. Ken very seriously told me, "By the time today is over,

you're going to want to rip the wiper lever right off the column!" And he was right.

Four hours later, we arrived at Wrong Road on the Leeuwin Estates. At the very end of the road is a tiny caravan (trailer to us Yanks) occupied by our friend and California neighbor, Hobart Brown. He was very glad to see us and we were very glad to see him, but mostly what we wanted to see was any flat surface on which we could go to sleep after three body days of traveling.

Since it is summer in Australia, the sun woke us up very early, so all three of us went into Margaret River for breakfast and a trip to the tourism bureau to pick up maps and brochures about stuff to do in the far south-west corner of Western Australia. You know you're not in the U.S. when you see kangaroos hopping along in the fields along with the cows and sheep. We found we could check our E-mail for 20 Australian cents per minute ($0.125 US) on a superfast line and so discovered that Ferndale had been totally isolated from the outside world when the Eel River flooded. Fortunately, the town is high enough that few houses would have been affected, but folks in the river bottoms were probably hanging their furniture off hooks in the ceilings (permanently installed) and taking their cattle to higher ground.

We weren't accustomed to the heat and it was Hobart's day off, so we sat around in his caravan watching DVD movies in the outback. It was odd watching 007 oozing and shmoozing in Baku on the Caspian Sea and looking past the "telly" to see roos and joeys hopping along. We took a short walk later when it was cooler. We saw more kangaroos, a heron, green ringneck parrots, some magpies and fascinating fences full of spiders. We didn't see any kookaburra, an odd relative of the kingfisher that had woken us up from our jet lag with its hyena-like laughter in the middle of the first night. The sunset was beautiful reds and pinks, with clouds overhead that scudded in from the Southern Ocean between Australia and Antarctica. Hobart went to bed early and since our bodies thought it was the middle of the afternoon, we stayed up a little longer, listening to the frogs calling from the cows' tank and watching the unfamiliar southern stars.

Curiously here, both the moon and the sun are to the north of the observer, rather than to the south as they are north of the equator. The moon's "face" also is standing on its head and you can't see the milky way except far to the north where it looks like light interference from a small town with blue street lights. The southern cross is beautiful and quite recognizable as it is on the Australian flag and many logos that we've seen before. It is a strange feeling to see the zodiacal constellations upside down. Here my dyslexia is an advantage, since it doesn't matter to me which direction anything is facing anyway.

The next day, we went with Hobart to Leeuwin Estates Winery where he is artist in residence. The winery is one of Australia's most prominent and well known vintners. In addition to the art of wine, Leeuwin buys paintings that they then use for their labels, provides Hobart with a workspace on their veranda and sponsors concerts with big-name musical artists like Julio Iglesias and k.d. lang. Hobart pointed out a large black skink sunning himself on the brick pavement. We tried to sneak up on it to take a photo, but lizards down here are on something's menu and they are all as fast as racerunners. Later that day we saw a squished gecko in the car park. It was the same color as the black bitumen of the paving, but we didn't take a picture because it was rather gross.

Ken's photographic mission down here (besides landforms and critters) is to attempt to document Hobart's southern sculptures. Hobart welds steel, brass and bronze. His northern work tends to be either abstracts or recognizable things like planes, trains and whimsy. However, his southern work is mostly people—stealing chickens, hanging chandeliers, gazing through windows and piloting improbable transportation devices like hot air balloons and unicycles with wings.

Hobart is also the Glorious Founder of the Kinetic Sculpture Race [KSR], an event which has been running every year since 1969 in Ferndale and around the nation and the world ever since. The Mt. Lawley Rotary Club sponsors the Australian KSR in Perth every year. Their proceeds financially benefit the Princess Margaret Hospital for Children and gives participants and spectators a wonderful experience. As they say, "It's all for the glory."

Ken photographed the pieces in Leeuwin's gallery that first day. Fortunately he finished all of them because the next day was really hot and he was overcome by the heat and fainted on the veranda. He hit his head on the way down and was totally knocked out, but came to in less than a minute, but was bleeding profusely and was dizzy and said he felt sick. So Leeuwin called an ambulance and we began our adventure with the Australian socialized medical system. First of all the ambulance arrived just about as soon as it was called and there were two EMT's, a driver and a trainee. They fitted Ken with a neck collar and put him on the trolley and loaded him into the van. One of the groundskeepers at Leeuwin had kindly brought our rental car around. I learned how to drive Ozzie by following the big green and white box with flashing lights.

The next big surprise was the hospital. No one asked our name or anything other than medical questions for at least the first hour. The ambulance service is all volunteer and since we aren't citizens here, apologized for having to present us with a bill for their services. The bill was about equal to a four person ride to O'Hare in rush hour. The doctor was a slender young woman in trendy bell bottoms and clunky heels who checked Ken all over while also pulling some kind of spines out of a bloke who'd wiped out surfing at Redgate Beach. No attitude and no worries, mate—but they didn't have a computerized tomography machine and they wanted to be sure that he didn't have any lasting damage from the bump on his head, so they stitched him up, called the ambulance and shipped him 90 kilometers (55.8 miles) to Bunbury. We drove right back up the road we had just come down two days before, but now I was following someone who knew the road, so I didn't worry about the street signs, just about Ken with his bloody bandage and uneven pupils. One CD later, we were there. They rolled Ken into the hospital and took him straight into emergency. No paperwork, no waiting, no nonsense.

After another lovely young female doctor had examined him, they apologized for the inconvenience and asked me to step into an office to fill out the paperwork for the billing. No one there had seen our kind of insurance card, but no worries, they called the U.S. insurance company (it was 8:00 A.M. in Connecticut) and cleared all the charges with the nurse/operator. They did x-rays and electrocardiograms and a CT of his head. The doctor, a local reporter (we are, after all quite exotic in Western Australia) and the CT operator and I sung a chorus of "I'm Looking Through You" while we watched the computer slice and dice Ken's brain.

They finally let him go at ten P.M. after tea and sandwiches a full 12 hours after he fell and we had the late night joy of phoning every hotel in Bunbury. Only one answered the phone and offered us a room with a single bed and breakfast for $88.00. I accepted and asked if it would be possible to get a pillow and a sheet so I could sleep on the floor. By the time we got lost and then found the hotel, they had chased someone else out of a room with a double bed and put us in it for the same price as the single. This was our first introduction to true Ozzie hospitality. They cooked us a full breakfast the next morning and wished us well. Then we drove back. But as I was driving we took the scenic route, through the last remaining tuart [*Eucalyptus gomphocephala*] forest, stopped at the Point Naturaliste lighthouse and at Yallingup Beach, which has fantastic granite boulders both at the shore and out in the surf. At Sugarloaf Rock, we saw a very large and very flat blue-tongued skink on the road. It was also too gross to photograph.

We drove down Caves Road to Leeuwin instead of taking the Bussell Highway where they drive 110 kilometers per hour (68 mph). Some Australians have a real problem with road rage, tailgating and flashing hand signals more appropriate to the inner city than to one of the most beautiful and unstressful places on Earth.

We went to Redgate Beach the next day. Ken took photos of the rocks in the surf, I built a sand castle and played with the sand crabs. We stopped for a sign that said "Raptor Rehabilitation" and saw fourteen species of Australian birds including eagles, kites, owls, cockatoos and galahs. My personal favorite was the tawny frogmouth. We saw a wild peregrine falcon hanging around the cage with the injured peregrines, I wondered if it was a mate, a child or just a friend visiting. We've seen most of these birds loose since then and I was really glad to have learned what they were from the injured captives. That night we fell asleep listening to at least two kinds of frogs calling from the cattle tank. I would really like to see some frogs here, but water is rare in the outback in the dry season and so they only call from the midst of fields defended by large bovine bulls or possessive sheep. It's certainly not a good idea to go bushwhacking in the dark with bulls.

Christmas Eve we drove back to Perth to spend the next few days with Hobart's Kinetic Sculpture Race cohorts. On the way, I pulled through an alley to turn around and came face to face with a huge, three foot long racehorse goanna. I stopped on a dime and shouted "lizard!" Ken was out of the car in a flash, but the racehorse deserves his name and had disappeared. So we didn't get a photograph of him, either.

As everything closes down for the 25th and 26th, everybody said we would be much better off in Perth than in the middle of nowhere for the holidays. Unfortunately, Perth was over 100°F the whole time we were there, so our experience of it was the inside of a shopping mall (gloriously cooled), and people's houses. Surprisingly, only one of the four houses we visited had air conditioning. Ken kept busy sweating over his camera taking pictures of Hobart's sculptures and I helped our hostess wrap presents for her family and tried not to drip on the ribbons. It just didn't seem like Christmas at 100 degrees!

They took us to see Romeo and Juliette in King's Park Botanical Garden. Shakespeare in Australian accents was interesting. The swordplay was stupendous and the actors superbly cast for their roles. The kookaburras sang from the trees and ducks dabbed about on the grass cadging handouts from the audience which dined alfresco and watched 2:40 hours of play with nary a trip to the bathroom, cell phone call or baby crying. This would be a good place to point out that Australian children are astonishingly well behaved. They do not pester for constant attention and I've yet to hear one whine or say "I'm bored," even if they are in a totally adult situation like the play. I'm not sure what is different about the parenting, but the results are superb and Americans could learn a lot about peace and quiet by learning Ozzie parenting skills.

Boxing Day was another party and then a trip to a subdivision south of Perth to meet Geoff and Maureen's daughter and son-in-law on their 10-acre starter home. Their neighbor has a WWI Tiger Moth biplane and he did loop-the-loops and stall loops and hammer loops over head while we watched. It was like a private airshow when one of his friends showed up in a more modern small plane and did rolls and spins, finally buzzed the airstrip and flew off towards Perth. The horses, dogs and puppies were unimpressed and the bright pink galah parrots happily ate seeds from the feeders while we sat on their veranda and talked.

We left Geoff and Maureen's the next morning stuffed with food and good times. We drove through Rockingham (sort of a newer Gary, Indiana) and to the lovely town of Madurah on the Indian Ocean. Don't miss Madurah if you ever get out to Western Australia [WA]. It seems a typical tourist town, until you realize that the boats are going out to watch whales and that the shoreline is bordered by a sculpture garden of works by local artists. We have met no other foreign tourists anywhere in WA, so tourism is geared to locals, mostly people from Perth down for a weekend.

The next day we went to the studio of a one-armed glassblower. He not only manages to make beautiful glassware but creates passionate works of art in a medium so fragile and light that you are almost afraid to touch it. I lined up the pieces I wanted to get and Ken said, "They'll never survive the shipping" at which point the woman who worked there tossed one down on the tile floor. It bounced several times and came to rest against the door brick. She said, "These will not break before you get home because they are cured for days from fire hot to room temperature." And she was right, there wasn't

even a chip in it! When the glassblower found out that I am Hobart's welding apprentice, he invited me back to his studio to work on some hot glass and also sent some lovely things to Hobart. We found one of Hobart's pieces he'd completely forgotten about at the glassblowers and photographed it.

Then we went to Calgardup Cave, a solution cavity in the local limestone. Unlike the U.S., the national parks rented us helmets and torches (flashlights) and sent us down into a cave on a set of steps that would make OSHA blanche with horror and personal injury lawyers rub their hands with glee. In places, the ceiling is so low that you bend over double and scrape under the stalactites to get to the end of the cavern where we found a ring of benches and we sat down in the glorious coolness (about 50°F) and turned out the torches and talked. I think we scared the bejezums out of the next group of tourists who didn't see us or hear us until they were about 10 feet away. They wanted to know if our torches had burned out; apparently sitting around in the utter blackness was not to their taste, although they tried it for about 30 seconds. We learned a lot about local natural history from the wonderful park workers when we checked in our helmets and lights and even found (for the first time) some books on local natural history. All this at a place that doesn't even show on the tourist maps because it is not a for-profit entity.

Driving back to the caravan, Ken spotted a snake on the road. Although it was a very flat and fly-infested four-foot-long tiger snake, we stopped and took pictures. Finally an Australian herp that would sit still for pictures! I turned to get back into the car and saw a skull in the roadside brush. I picked up the skull, three jawbones and some vertebrae of a small kangaroo! At that point, I realized I wasn't in California anymore.

Today we stood in both the Indian and Southern Oceans when we went to the Cape Leeuwin point at the very southwestern-most point of this glorious continent. We were hunting for stromatolites when I came across a lizard convention. There were about a dozen lizards all sunning themselves on rocks. They looked like "Cnemies" from our southern deserts. Of course, all of them disappeared before I could get my camera out or call Ken back to see them. I hope to see more herps both here and when we fly over to Brisbane for 10 days in about 10 days. I'll tell you all about it in February.

Please do not stop sending clippings! I'm going to need them when I get home and have to kick out a column in full jetlag! Send whole pages of newspaper with your name and publication/date firmly attached to each piece to: Ellin Beltz, POB 934, Ferndale, CA 95536.

Unofficial Minutes of the CHS Board Meeting, December 13, 2002

Jack Schoenfelder called the meeting to order at 7:34 P.M. Board members Dan Bavirsha and Emily Forcade were absent.

Officers' Reports

Recording Secretary: Steve Sullivan read the minutes he took at the November 15 board meeting. Corrections were made and the minutes were accepted. Many thanks to Steve Sullivan for filling in for the recording secretary.

Treasurer: Greg Brim distributed the Treasurer's report, which included the status of the massasauga T-shirt sales.

Membership Secretary: Mike Dloogatch reported that there were 775 November *Bulletin*s mailed. Brochures, membership cards and renewal forms have been printed showing the new dues and the new mailing address. New reminder postcards for those who fail to renew will be printed soon. *Reptilia* and *Fauna* magazines would like to exchange publications with us. Mike Dloogatch moved to accept these two new exchange members, seconded by Jenny Vollman. The motion carried unanimously. Without prior board approval, Mike had printed and mailed reminders about the December 18 meeting date to Chicago area members at a total cost of about $100 dollars. Greg Brim moved to have the CHS pay these expenses; Jenny Vollman seconded. The motion was approved unanimously.

Vice-president: Lori King said that in January Jim Brueggen from the St. Augustine Alligator Farm will speak about crocodilian behavior. Lori also reported that the Utila Island conservation project had begun releasing head-started babies.

Corresponding Secretary: Steve Sullivan said that we received a phone call from someone regarding permits for pine snakes; they would not say where they were located. He gave them phone numbers for the appropriate departments. A phone call was received about Chicago Wilderness affiliates, and Steve gave the caller Tom Anton's phone number. Jim Hoffman brought up the idea of the E-mail list being used as a space for advertising merchandise for sale, he has had several requests. The consensus was not to allow the use of the E-mail list for this purpose. Project Exploration still needs a thank-you note for the $500 they donated to the grants program. Steve Sullivan said he would take care of this.

President: Jack Schoenfelder set dates for the 2003 Board Meetings: 1/17, 2/14, 3/14, 4/18, 5/16, 6/13, 7/18, 8/15, 9/12, 10/10, 11/14 and 12/19.

Standing Committees

ReptileFest: Darin Croft said that instead of advertising on Radio Disney like last year, he has been speaking to Sandy Quinn at *Reptiles* Magazine, who would give us three 1/3-page ads for about the same price. For $600 vendors could be sponsors and be in the ad in *Reptiles*, get a little logo on our flyers and get one table at ReptileFest. Tables are $100 for the weekend or $60 per day. Jenny Vollman is in the process of

getting a new jewelry vendor for ReptileFest. It was brought up that Illinois herps display needs more manning and display people. Tom Anton will help this year. In February there will be a meeting for those interested in helping out with the Illinois herp display.

Grants: Mike Redmer reported no new E-mails, with only one proposal having been submitted as of 18 days from the deadline.

Shows: Jenny Vollman mentioned that we would be participating in the Nature Museum's Members' Night 12/15, 5:30 – 8:30 P.M. She received a call from Michelle Boglio who wanted volunteers for some holiday shows, but had not gotten hold of her to figure out dates and what exactly was being done. The idea of the Nature Museum needing exhibits or volunteers for the new "Creepy Crawlies" exhibit was brought up.

Raffle: There is still no one to officially chair the raffle. We still have some stuff, but Steve Sullivan has not yet sent letters looking to solicit more donations. Last month's raffle made about $80. Steve Sullivan mentioned having three *Reptiles* Magazine subscriptions and a pair of Pilstrom tongs for the next raffle. Jack Schoenfelder has a tank and stand to bring.

Adoptions: Linda Malawy absent. People seem willing to donate to adopt animals. The notion of reimbursing Linda for her adoptions expenses was brought up, but a full figure had not been determined.

Chicago Wilderness: In January there will be a meeting of the Amphibian Monitoring Committee.

Ad Hoc Committees

Nominating committee: Jack Schoenfelder thanked to Jim Hoffman and the nominating committee for a well-run election.

Annual awards: Greg Brim said that the plaques had been ordered for the awards.

Salamander Safari: The Salamander Safari will be on 3/29/03. Dave Mauger of the Will County Forest Preserve District will provide the sites and projects to monitor.

Reptile of the Month: In January it will be ball pythons, and in February it will be herps with aberrant patterns or unusual colors.

Illinois Dangerous Animals Act: The IDAA Committee's report was discussed. The draft on the website is not official. Whatever is concluded must be board approved and then a new law must be proposed and passed; this is just a CHS committee. Various levels of permit structures were discussed: Using permits to control nonvenomous regulated reptiles, crocodilian education and rehab permits. The idea of a locked cage law for large constrictors was discussed as was law enforcement check-in and PIT tags for venomous species as a way to control, yet get around the bureaucratic limitations of a permit system. Doctor Barten brought up rumors that the CHS was working with the state to outlaw the keeping of reptiles. Several board members wanted a copy of the report E-mailed to them.

Massasauga conservation: Some California herp societies were interested in the massasauga conservation project. John Archer is now in charge of inventory and mail order of the T-shirts. Mike Redmer spoke about an agreement made 1½ years ago between the DNR and the Army Corps of Engineers about consulting the DNR before changing things that could impact the Lake Carlyle massasaugas. Steve Sullivan and Mike Redmer are on the Army COE mailing list. A campground was expanded and row crops were planted without proper DNR notification. These activities may be in breach of this agreement. The goal of the CHS would be to let the Corps know we know what is going on. However, we need information before proceeding. Mike Redmer proposed sending a Freedom of Information Act request and getting documents before talking to the Corps. The sending of the FOIA request was approved by the board. Mike Redmer also mentioned that as a nonprofit group we should be able to get any copying fees waived.

Position Paper: A CHS position paper regarding commercial trade of reptiles and amphibians in Illinois was presented to the board for approval by Steve Sullivan. Jim Hoffman brought up the idea of this paper being Illinois specific, as laws are different in Illinois. The committee accepts and stands behind the draft. Ton Anton made a motion to accept the position paper, Darin Croft seconded. All voted in favor, except one abstention, Greg Brim. The paper is to be published in the *Bulletin* and on the website. A question of past process of recording votes that are not unanimous was brought up by Dottie Humbert. In the past it was decided that non-unanimous votes were to be recorded by name. This process was kept in effect.

Old Business

State Reptile: Ron Humbert drafted a letter to the Jackson Middle School in Villa Park, 11/25/02, inviting them to assist the CHS in selecting a state amphibian. The Illinois state museum and library will also be contacted. Illinois would be the sixth or seventh state to have an amphibian. Ron suggested that we go for state reptile after amphibian, while Mike Redmer said that it may be cheaper to Illinois and more likely to get both if they are ridden through together.

Insurance: Jack Schoenfelder has returned a questionnaire to our broker so that he can seek quotes on insuring the board of directors against any potential liability arising from the board's decisions.

CHS trailer: Steve Sullivan got a definite maybe about storing the trailer at the Museum. Rich Crowley can keep it for the time being.

Round Table

Joan Moore asked to be removed as an honorary member. Though she is very grateful for the honor she would like to respectfully become a paying member once again. The board accepted the request with great thanks.

The meeting was adjourned at 9:12 P.M.

Respectfully submitted by Zoe Magierek

Bull. Chicago Herp. Soc. 38(1):18-20, 2003

CHS Illinois Dangerous Animals Act Committee
Report to the CHS Board of Directors, December 13, 2002

Introduction

The current Illinois Dangerous Animals Act (IDAA) is well-intentioned but poorly thought out and written. The CHS Board of Directors formed a committee to look into ways of improving the law while protecting the rights of private citizens to maintain reptile pets. Before the committee held its first meeting, false rumors were being spread by word of mouth, at various reptile shows and expos, and even on various web sites. These rumors incorrectly reported that the CHS was working with the State of Illinois to ban all reptile pets, or to prevent private citizens from keeping reptiles while allowing only CHS members (or CHS Board members, depending on the rumor) to be allowed to keep reptiles. Such rumors are blatantly false and the people who spread them are misinformed. Because the IDAA Committee serves the CHS, its actions and findings are open to all members. Committee reports have been given at both CHS Board of Directors and General meetings. The current report is posted here to make it more widely available to CHS members and concerned herpetoculturists, hobbyists and reptile keepers.

The Problem

The Current IDAA Law outlaws:

"Poisonous reptiles"

"Life-threatening reptiles"

"Poisonous" should read "Venomous"

The strict, biological definition of venomous reptiles includes those with Duvernoy's glands. This includes many species harmless to man that are often kept as pets, such as gartersnakes and hog-nosed snakes.

Clearly this is not the intent of the law.

The term "life-threatening" is vague

The Illinois Supreme Court defined "life-threatening" reptiles for private ownership as constricting snakes over 15 feet and crocodilians over 4 feet.

The Department of Agriculture defined "life-threatening" reptiles for licensees (pet stores, etc.) as constricting snakes over 6 feet and all crocodilians.

When prohibited animals are defined by length, what is the owner to do when a legal herp grows too long?

They can't be sold, as they are illegal. Do they have to be euthanized (put to sleep)? Will many people continue to keep them illegally?

It has come to our attention that confiscated and abandoned alligators are turning up with up to half their tails amputated in cruel, inhumane attempts by unethical persons to keep their pets under the length requirements.

Can it really be said that a 15-foot snake is dangerous but a 14-foot, 11-inch snake is harmless? Obviously not.

No permit system exists. A number of people, including CHS members, have large reptiles and keep them responsibly for legitimate display, research, educational and rescue/rehabilitation purposes. Permits exist to allow people to keep state endangered and threatened reptiles for such purposes; permits should exist for so-called "dangerous" ones too.

The Reality

Some people are going to be unhappy unless ALL reptiles are allowed without restriction, or unless the dangerous species in which they have particular interest—such as giant constricting snakes or crocodilians—are allowed.

This is an unrealistic expectation.

There ARE laws regulating dangerous reptiles now (the IDAA); it would be naïve to expect these laws simply to be repealed.

Every time huge constrictors, crocodilians or venomous species are confiscated, escape, or injure someone, sensational stories appear throughout the media. This promotes laws prohibiting ownership of these reptiles.

To have no state-wide regulatory laws is to invite local communities (county, city, village) to pass VERY RESTRICTIVE laws. Such local laws often ban the ownership of ALL reptiles

Why Should the CHS Get Involved?

The current law is poorly written and open to interpretation.

Any new law written WITH input from the herpetological societies in the state HAS to be better at protecting our interests and rights to keep reptile pets than any law written WITHOUT input from those herpetological societies. The best example is the current IDAA, which was written without input from herpetologists or reptile keepers.

The CHS IDAA Committee Process is Democratic

The CHS Illinois Dangerous Animals Act (IDAA) Committee reports to the CHS Board of Directors and does not have any power by itself. Committee reports are made to the CHS Board on a regular basis.

The purpose of the IDAA Committee is to represent CHS members in supporting reptile keeper interests in any new reptile-related laws that might come along.

The committee welcomes input from any CHS member.

The committee members are, in alphabetical order:

Steve Barten (reptilian veterinarian), Bob Bavirsha (education and rehabilitation; large constrictors and crocodilians), Rob Carmichael (education, rehabilitation and public display; large constrictors, crocodilians and venomous species), Rich Crowley (CHS adoptions committee), Mike Dloogatch (CHS Officer, long-time CHS

Board member), Linda Malawy (CHS adoptions committee), Steve Sullivan (CHS Board Member, museum and public display experience and contacts).

Any committee conclusions must be approved by the CHS Board of Directors to be passed along to the Department of Natural Resources or state legislature as official CHS policy.

The State Agencies Involved in Reptile Laws

The state agencies that are involved in animal issues are the Department of Natural Resources (DNR) and the Illinois Department of Agriculture (IDOA). These agencies are currently investigating options to update and improve the Illinois Dangerous Animals Act.

The DNR has established a Herp Task Force to improve and consolidate Illinois regulations concerning reptiles. Currently, the DNR governs native species regulations, state threatened and endangered species regulations, and aquaculture related laws. The IDOA controls other reptile laws, including those regulating the sale of reptiles in pet stores.

Options for new legislation to be introduced will be explored once agreement by all parties has been accomplished.

The DNR will seek input from organizations such as the herp societies from Chicago, Peoria, Champaign, and St. Louis.

Any proposed laws, whether written by the DNR, private citizens or any interested parties, still have to be passed by the legislature to become law.

The DNR seeks to work with all citizens in order to find a reasonable compromise in relation to reptile regulation issues.

Ideas for Consideration to Improve the Current Laws

The following are the pertinent issues that need to be addressed. Neither the DNR nor the CHS have yet adopted an official position on any one of these issues. Potential problems and potential solutions are listed briefly below, but only for the sake of discussion. The ideas presented here are not final, absolute, or etched in stone, but simply represent possibilities or starting points at this time.

Should giant constrictors be outlawed?

This is a complex issue. Restriction based on length is unrealistic as previously explained. Restriction based on species is unpopular with the herpetological societies, and leads to the question of who decides which are dangerous and which are not. Regulation would be preferred to restriction.

A compromise to allow ALL SPECIES of constricting snakes might be to require large specimens to be kept in locked, escape-proof cages except for trips to the veterinarian.

Should only snakes above a certain size be required to be kept in locked cages? There should be no need to keep a two-foot rosy boa in a locked cage because it is a constrictor. Would a 2-foot Burmese python need to be kept in a locked cage because adult Burmese pythons can be huge?

Any time a large snake escapes, its owner could claim he was in the process of taking it to the veterinarian.

Should crocodilians be outlawed?

Certain private Illinois citizens currently keep crocodilians in a responsible manner for bona fide educational and rehabilitation purposes. Some kind of permit system is necessary to allow these activities to continue.

Should venomous reptile species be outlawed?

It has been suggested to define and restrict those species dangerous to man by scientific name to prevent confusion.

One *possible* list—and it should be stressed that this list is not finalized or permanent—could be:
All members of the familes Helodermatidae (Gila monsters), Elapidae (cobras, coral snakes), Hydrophiidae (sea snakes), Viperidae (vipers and pit vipers), Atractaspidae (burrowing asps), as well as *Dispholidus typus* (boomslang), *Thelotornis kirtlandii* (twig snake), *Rhabdophis* species (keelback snakes), and *Boiga dendrophila* (mangrove snake).

Surgically altered (venomoid) venomous snakes are currently considered to be in the same category as venomous ones because they are not easily identified, surgical results can be less than 100%, and they have the capability of producing venomous offspring.

One proposed idea concerning venomous snakes:

Some form of permit system to allow possession of non-lethal venomous species by experienced keepers for bona fide educational and rehabilitation purposes. Various conditions (a certain number of hours training by or working with a professional herpetologist, locked cages, escape-proof rooms, antivenin on hand, local health care professionals notified) might be required to obtain a permit.

Additional Options

If non-venomous reptile species, such as large constrictors and crocodilians, are regulated, should a permit system be required to allow their possession under certain circumstances?

There are many Illinois citizens who keep large reptile species for legitimate educational, research, display and rehabilitation purposes. A permit system would allow these activities to continue.

The more complex and expensive a proposed permit bureaucracy, the less likely it might be written into law, even if permit fees are involved.

If a permit system is instituted, how should it work? Possible solutions, which again are only ideas and are not finalized or permanent, might include some form of the

following:

Piggyback dangerous reptile permits on the current state endangered species permit system (for educational, display or research purposes).

There is some concern that this might flood that system with paperwork it is not equipped to handle.

Instead of permits, simply require owners of dangerous reptiles to register with local law enforcement agencies (along with escape-proof housing requirements).

This is what is done in Missouri.

This would avoid the need for an expensive government office to issue and keep track of permits.

Individual restricted animals (not ALL animals, just the large constrictors and crocodilians listed in the IDAA) could be required to have microchip PIT tags implanted for positive identification.

In the event of an escape or other incident, law enforcement agencies would know who to contact to pick up the animal.

Some people who don't trust the government won't want their information in government hands. However, any permit system would put MORE personal information in government hands than simple registration with local law enforcement agencies. Giant constrictors and crocodilians are unlikely to be allowed with no regulation whatsoever.

Conclusions

The CHS is NOT trying to outlaw the private ownership of reptiles. Persons who spread rumors to that effect are misinformed.

The CHS IS trying to protect the rights of private citizens to own reptiles as new laws are written.

To have no state regulatory laws is to invite local communities (county, city, village) to pass VERY RESTRICTIVE laws, even banning all reptiles.

This will be a slow process and it is unlikely that any changes will occur very soon.

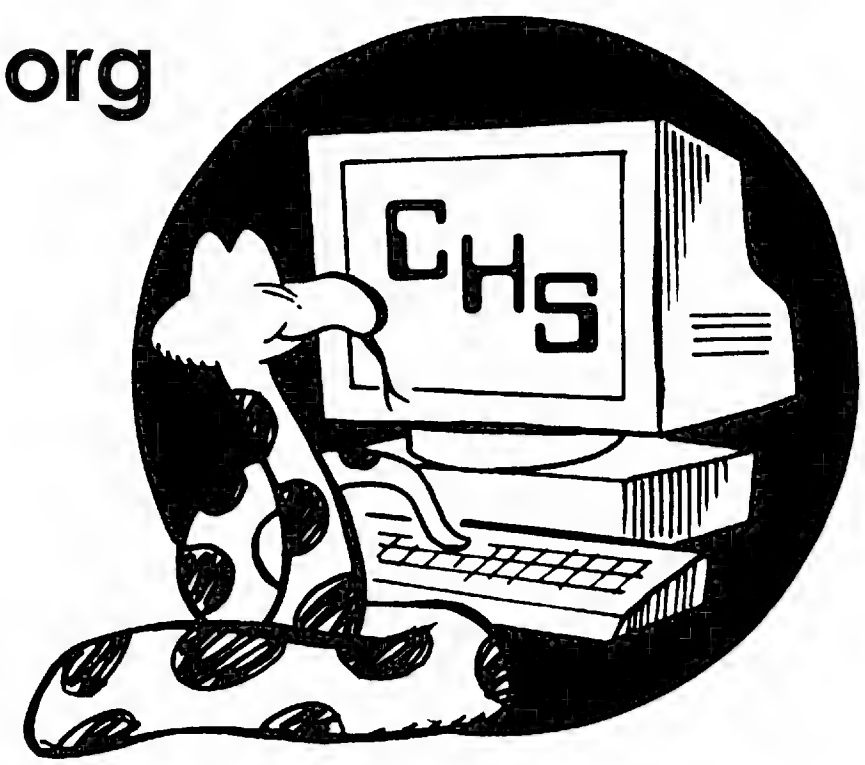
Newly elected legislators will be sworn in sometime in January; they will be faced with other, more immediate business as soon as they take office.

The DNR Herp Task Force has been formed, but input from many agencies and groups will have to be coordinated.

The CHS intends to be involved and offer input as new laws are formed, and to protect our rights to own reptile pets.

Next time you surf the WorldWide Web, crawl, run, slither, slide, jump, or hop over to the CHS web site!

www.chicagoherp.org



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- **Much, much more!**

Chicagoherp.org is accepting applications for banner advertisements or links from herpetoculturists and manufacturers of herp-related products. Visit the site and contact the webmaster for details on how you can sponsor CHS!

Herpetology 2003

In this column the editorial staff presents short abstracts of herpetological articles we have found of interest. This is not an attempt to summarize all of the research papers being published; it is an attempt to increase the reader's awareness of what herpetologists have been doing and publishing. The editor assumes full responsibility for any errors or misleading statements.

DIET OF THE ROCK RATTLESNAKE

A. T. Holycross et al. [2002, J. Herpetology 36(4):589-597] describe the diet of the banded rock rattlesnake, *Crotalus lepidus klauberi*, using samples collected in the field and from museum specimens, as well as several records from unpublished reports. Most records (approximately 91%) were from the northern Sierra Madrean Archipelago. Diet consisted of 55.4% lizards, 28.3% scolopendromorph centipedes, 13.8% mammals, 1.9% birds and 0.6% snakes. *Sceloporus* spp. comprised 92.4% of lizards. Extrapolation suggests that *Sceloporus jarrovii* represents 82.3% of lizard records. Diet was independent of geographic distribution (mountain range), sex, source of sample (stomach vs. intestine/feces), and age class. However, predator snout–vent length differed significantly among prey types; snakes that ate birds were longest, followed in turn by those that ate mammals, lizards, and centipedes. Collection date also differed significantly among prey classes; the mean date for centipede records was later than the mean date for squamate, bird, or mammal records. No difference was found in the elevation of collection sites among prey classes.

DUSKY GOPHER FROG DEMOGRAPHICS

S. C. Richter and R. A. Seigel [2002, Copeia (4):962-972] studied variation in the population ecology of dusky gopher frogs, *Rana sevosa*, in southern Mississippi from 1996 to 2001. Specifically, they measured adult size structure, adult survivorship, residency length within the pond, and juvenile recruitment using a drift fence that completely enclosed the study pond. Population size structure shifted among years because of lack of recruitment in previous years, adult mortality, and differential age at maturity. Age at maturity was 6–8 months for males and 24–36 months for females. Annual survival ranged from 65 to 92%; however, the rate at which adults returned to breed among years was low (16–22%). The average number of seasons that adults bred was 1.2, although nine individuals bred in 3–5 seasons. The data suggest that *R. sevosa* has high population turnover among years and that most adults five less than 7 yr. Because of the low rate of return of adults among years and complete isolation of the population, the viability of the population is contingent on consistent recruitment of juveniles with minimal years of reproductive failure.

EAR LOSS IN SCINCID LIZARDS

A. E. Greer [2002, J. Herpetology 36(4):544-555] reports that scincid lizards have probably lost the external ear opening at least 17 times. Based on features of the middle ear, especially the orientation and attachment of the extracolumella and columella, five basic types of ear loss are recognized. These five types are strongly associated with major lineages. Ear loss seems to be associated with both small size and fossorial habits.

PHYLOGENY OF THE HOMALOPSINES

H. K. Voris et al. [2002, Copeia (4):906-915] report on the Homalopsinae (Oriental–Australian rear-fanged water snakes), a small (34 species, 10 genera) colubrid subfamily notable for its ecological and morphological diversity. Despite considerable interest in the ecology and evolution of this group, phylogenetic relationships within the subfamily are poorly resolved. The authors present the results of a molecular phylogenetic study of the homalopsines based on partial sequence of three mitochondrial genes (12S and 16S ribosomal RNA and cytochrome *b*) from 14 ingroup species, five Old and New World natricines and the Old World colubrid, *Dinodon semicarinatus*. Maximum likelihood analysis in combination with bootstrapping and Bayesian Markov chain Monte Carlo methods for assessing phylogenetic confidence revealed that the single most likely topology contained a number of well-supported nodes. Homalopsine monophyly was strongly supported with respect to the outgroups included in the study. *Cantoria violacea*, a morphologically distinctive marine crustacean eater, formed the sister group to the rest of the homalopsines. *Enhydris*, the most species-rich genus in the subfamily, was polyphyletic with respect to other homalopsines although five morphologically and ecologically similar species formed a well-supported clade. The marine crustacean eaters *Fordonia leucobalia* and *Gerarda prevostiana*, also formed a novel clade. The authors discuss the evolutionary and ecological implications of this phylogeny for the Homalopsinae.

LIMB REGENERATION IN DWARF AFRICAN CLAWED FROGS

J. E. Girvan et al. [2002, J. Herpetology 36(4):537-543] note that the ability to regenerate lost or amputated limbs varies greatly among amphibians. To gain a better understanding of phylogenetic and ontogenetic factors influencing regenerative ability, regeneration in tadpoles of the dwarf African clawed frog, *Hymenochirus boettgeri*, is described for the first time, then compared to data from closely related *Xenopus laevis*. Hind limbs of tadpoles of *H. boettgeri* were amputated at two different levels along the proximo-distal axis of the limb (at the knee and ankle joints), at stages ranging from 52 to 59. Tadpoles were allowed to recover for 15 or 20 days, at which times the amount of regeneration was examined. Observations were made through external morphology and whole-mount histological staining. *Hymenochirus*, like *X. laevis* and indeed like most anurans, gradually loses the ability to regenerate hind-limb structures as it progresses through metamorphosis, and this loss occurs in a proximo-distal direction; the ability to regenerate is retained longer, distally. *Hymenochirus* and *Xenopus* show similar patterns of limb and digit regeneration. In both pipid species, loss of regenerative ability appears to be correlated with the onset of ossification in the hind limb, although timing of this event differs between the two species.

Advertisements

For sale: rats and mice—pinkies, fuzzies and adults. Quantity discounts. Please send a SASE for pricelist or call Bill Brant, *THE GOURMET RODENT*, 6115 SW 137th Avenue, Archer FL 32618, (352) 495-9024, E-mail: GrmtRodent@aol.com.

For sale: murine-pathogen-free rats and mice available in all sizes, live or frozen: pinkies, fuzzies, crawlers, small, medium and large. Frozen crawler mice in lots of 2000, $.17 each. Also available, full grown hairless mice. FOB shipping point. Master Card accepted. Call (518) 537-2000 between 8:00 A.M. and 5:00 P.M. or write SAS Corporation, 273 Hover Avenue, Germantown NY 12526 for prices and additional information.

For sale: from **The Mouse Factory**, producing superior quality, frozen feeder mice and rats. We feed our colony a nutrtionally balanced diet of rodent chow, formulated especially for us, and four types of natural whole grains and seeds. Mice starting from: pinks, $.17 each; fuzzies, $.24 each; hoppers, $.30 each; weanling, $.42; adult, $.48. Rats: starting with pinks at $.45 each, to XL at $1.80 each. Discount prices available. We accept Visa, MC, Discover or money orders. P.O. Box 85, Alpine TX 79831. Call us **toll-free** at (800) 720-0076 or visit our website: http://www.themousefactory.com.

For sale: from Bayou Rodents, excellent quality feeder mice and rats. Every size available. Pinks starting at $20/100. Orders are shipped by overnight service Monday thru Thursday. We accept Visa, MasterCard and Discover. For more info, contact Rhonda or Peggy, (800) 722-6102.

For sale: **high quality frozen feeders**. Over a decade of production and supply. Seven sizes of mice availabe: small newborn pinks up to jumbo adults. Prices start at $25 per 100. Feeders are separate in the resealable bag, not frozen together. Low shipping rates. Free price list. Kelly Haller, 4236 SE 25th Street, Topeka KS 66605, (913) 234-3358 evenings and weekends.

For sale: **Pillstrom Snake Tongs** are still available and are shipped worldwide. For brochure, price list or to order: Pillstrom Tongs, 4617 Free Ferry Road, Fort Smith AR 72903-2363, (479) 452-3001 phone, (479) 452-3671 fax. E-mail: pillstromt@aol.com. Website <members.aol.com/mpillstrom>.

For sale: herp books. *Forty Queensland Lizards* by Floyd Dale, 1973, drawings of each species, range maps, $14; *Snakes and Lizards of Tasmania* by Hutchinson, Swain, and Driessen, 2001, 64 pp., color photo of each of the 21 species, range maps, keys, $18; *Longevity of Snakes in Staten Island Zoo* by Carl Kauffeld, 1961, 4 pp., 3 b&w photos, $4; *Handbook of Common New Guinea Frogs* by J. I. Menzies, 1976, 75 pp., 12 color plates, plastic boards, $27; *The Reptiles of the Kruger National Park* by U. de V. Pienaar, 1966, 223 pp., 100 b&w plates, some writing in ink on cover and spine, $50; *Handbook of Lizards* by Hobart Smith, 1946, 557 pp., 134 b&w plates, no DJ, author's name lettered across edges of bottom pages, hardbound, $45; *Snakes of the American West* by Charles E. Shaw and Sheldon Campbel, 1974, 332 pp., 74 color photos, DJ, hardbound, $36; *The Frog Book* by Mary Dickerson, 1969 reprint (1906), 253 pp., 286 b&w photos, 16 color plates, $16. All publications softbound except as noted; all in excellent condition unless indicated otherwise. Prices postpaid for orders $25 and over, $2.50 postage and handling for orders under $25. William R. Turner, 6014 Blue Ridge Drive, Apt. A, Highlands Ranch, CO 80130; (720) 344-6197; E-mail: turnerbmrk@prodigy.net.

For sale: 2-year-old c.b female green tree python, excellent condition, $900; c.b. '01 green tree python, $325. Mike Wood, (574) 269-3441. E-mail: 2bears@myvine.com.

For sale: Rat snakes. Cunningham's *Elaphe*—Specializing in rare *Elaphe*. Working with *E. dione*, *E. ridleyi*, *E. climacophora*, corns, and many more. Rick, (309) 353-9661. E-mail: rick1@ntslink.net. Web site: http://www.cunninghamselaphe.com.

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Wanted: big-headed turtles; mata mata turtles; Mexican giant mud turtles (*Staurotypus triporcatus*); exceptionally large common snappers (45 lbs. & up); large alligator snappers (over 90 lbs.); spectacled caiman from Trinidad, Tobago and Surinam; dwarf caiman; smooth-fronted caiman; albino turtles (except red-eared sliders). Walt Loose, (610) 926-6028, 9:00 A.M. – 1:00 P.M. or after 11:30 P.M. Eastern Time.

Line ads in this publication are run free for CHS members—$2 per line for nonmembers. Any ad may be refused at the discretion of the Editor. Submit ads to: Michael Dloogatch, 6048 N. Lawndale Avenue, Chicago IL 60659, (773) 588-0728 evening telephone, (312) 782-2868 fax, E-mail: <MADadder0@aol.com>.

Herpers: Get Involved

by Jim Hoffman

We're all fellow Herpers, and we want to get involved
How to go about it, is the thing that must be solved

Many ways to choose from, for the young and old alike
Find one that will suit you, like a show or a long hike

Some enjoy the zoo trip, it is sure a lot of fun
Others like safari, to go herping in the sun

'Fest is really awesome, it's the best show of the year
When you come to see it, you'll know why we hold it dear

Most enjoy the meetings, where you're sure to learn a lot
And view raffle items, which you just may win — or not

Board meetings may bore you, but there's work for us to do
All twelve members helping, that does not mean one or two

I know that we'll see you, now that you know all the ways
To get involved is fun, it can brighten up your days

One more thing to tell you, as a member — old or new
We are what you make us, for the CHS is you

News and Announcements

FROG MONITORS NEEDED

It's that time of year! Spring frog workshops:

These will train you to participate in the Chicago Wilderness Calling Frog Survey. Return monitors can use the workshops as a refresher, and to learn about any changes in protocols for 2003. This year, we'll also be introducing a new option for **adding salamanders and reptiles** to your search list — so come on out to learn how.

Chicago: **Tuesday, February 11, 6:30–8:30 P.M.** Lincoln Park Cultural Center, 2045 N. Lincoln Park West

DuPage County, Illinois: **Wednesday, February 5, 6:30–8:30 P.M.** Grounds and Resources Complex at 29W220 Mack Road in West Chicago, a half mile east of Route 59. Park in the lot on the north side of Mack Road and walk up the drive past the chain-link gate to the center building.

Indiana: **Thursday, February 20, 6:30–8:30 P.M.** Bailly Ranger Station of Indiana Dunes National Lakeshore, at 1100 N. Mineral Springs Road in Porter, Indiana. Located between U.S. Routes 12 and 20, about 1.5 miles west of state route 49. From the east on 80/94, take exit 26B onto Route 49 going north. Then west onto U.S. 12 and follow the signs. From the west on 80/94, take exit 22, head east 2–3 miles on U.S. 20, and follow the signs to Lakeshore headquarters.

Indiana: **Saturday, February 22, 10:00 A.M.–noon.** Saint Joseph's College in Rensselaer, Indiana — on Highway 231 South, just off of Interstate 65. Meet in Courtney Auditorium in the Core Building.

Kane County, Illinois: **Saturday, February 15, 9 A.M.–noon**. Pottawatomie Park. Coming west on Route 64 (called Main Street in St. Charles), turn north at 2nd Avenue, two blocks before the river. Second Avenue ends at Pottawatomie Park — head west and go to the large building down by the river.

Lake County, Illinois: **Saturday, February 8, 11:00 A.M.–1:00 P.M.** Lakewood Discovery Museum, in Wauconda. The main entrance is on Rte 176, just west of the intersection of 176 and Fairfield Road. Once you turn into the entrance there are signs to the discovery museum.

McHenry County, Illinois: **Saturday, February 1, 9 A.M.–noon**. Prairieview Education Center at 2112 Behan Road, Crystal Lake — just south of Rte 176, between Rte 31 and the Fox River. Heading NE from Crystal Lake on Rte 176, turn right on Behan Road after passing Valley View/Silver Lake Road, and take another right at the end of the road. Please **pre-register** with Sara Denham, at sdenham@mccdistrict.org; (815) 728-8307.

Will County, Illinois: **Saturday, February 15, 10:00 A.M.–noon.** Environmental Learning Center of the Forest Preserve District, 20851 S. Briarwood Lane, Mokena. Head north on Wolf Road from Lincoln Highway, turn right at Cleveland, and right at Briarwood.

CHS MEMBERS

WE NEED YOUR HELP!

ReptileFest 2003 is almost here...!

What is ReptileFest?

The nation's largest educational reptile and amphibian show. It's an event where CHS members display their animals and talk with the public about reptiles and amphibians. (No animals are bought or sold.) Last year, nearly 2,500 people attended!

When and Where is ReptileFest?

The weekend of April 5–6 at the University of Illinois–Chicago's P.E. Building. (It's just a few minutes southwest of downtown Chicago). Open 10 am – 5 pm both days.

Why should I help?

The event raises money to support our CHS programs such as grants, it increases the public's awareness of diversity and conservation issues, and it's a lot of fun!

How can I help?

By being an exhibitor, serving on the committee, or helping with set-up of the event. Any amount of time you can give will make a difference. If you only participate in one CHS event each year, this should be it—reserve the date right now!

To exhibit, help out, or just get more information, contact
Darin Croft at (773) 288-8851 / dcroft@fieldmuseum.org
You can also check out our **website**: www.chicagoherp.org

UPCOMING MEETINGS

The next meeting of the Chicago Herpetological Society will be held at 7:30 P.M., Wednesday, January 29, at the Peggy Notebaert Nature Museum, Cannon Drive and Fullerton Parkway, in Chicago. **John Brueggen**, the general curator at the St. Augustine Alligator Farm in Florida, will speak to us about some remarkable newly discovered aspects of crocodilian behavior.

The regular monthly meetings of the Chicago Herpetological Society now take place at Chicago's newest museum — the **Peggy Notebaert Nature Museum**. This beautiful new building is at Fullerton Parkway and Cannon Drive, directly across Fullerton from the Lincoln Park Zoo. Meetings are held the last Wednesday of each month, from 7:30 P.M. through 9:30 P.M. Parking is free on Cannon Drive. A plethora of CTA buses stop nearby.

Board of Directors Meeting

Are you interested in how the decisions are made that determine how the Chicago Herpetological Society runs? And would you like to have input into those decisions? If so, mark your calendar for the February 14 board meeting, to be held at the North Park Village Administration Building, 5801 North Pulaski Road, Chicago. To get there take the Edens Expressway, I-94, and exit at Peterson eastbound. Go a mile east to Pulaski, turn right and go south to the first traffic light. Turn left at the light into the North Park Village complex. At the entrance is a stop sign and a guardhouse. When you come to a second stop sign, the administration building is the large building ahead and to your left. There is a free parking lot behind the building.

The Chicago Turtle Club

The monthly meetings of the Chicago Turtle Club are informal; questions, children and animals are welcome. Meetings normally take place at the North Park Village Nature Center, 5801 N. Pulaski, in Chicago. Parking is free. For more info call Lisa Koester, (773) 508-0034, or visit the CTC website: http://www.geocities.com/~chicagoturtle.

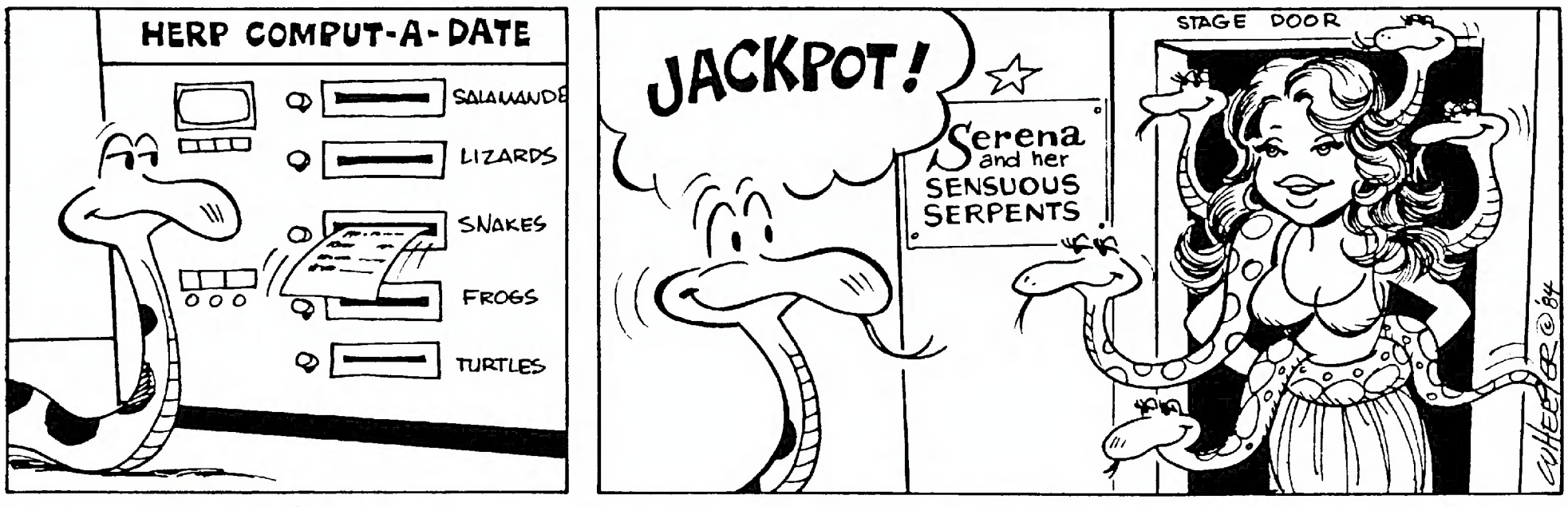
HERP OF THE MONTH

Each monthly meeting will showcase a different herp. CHS members are urged to bring one specimen of the "Herp of the Month" to be judged against the entries from other CHS members. Prizes will be awarded to the top three winners. In January, members are invited to bring **ball pythons**. In February, bring **any herp with an aberrant color or pattern**.

DUES INCREASE

Effective November 1, 2002, the annual cost of an Individual Membership in the Chicago Herpetological Society increased by $3 — from $22 to $25. Similarly, the cost of a Family Membership has gone up from $25 to $28 per year. All other categories of membership are unchanged. This is our first dues increase since August 1993.

THE ADVENTURES OF SPOT



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